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ABSTRACT

A study of cooperative education in the United States over the period of July 1975 through November 1977 had two purposes: (1) to determine the degree to which it is a viable educational and/or financial aid mechanism for higher education institutions to adopt; and (2) to determine the effectiveness of the federal role in supporting cooperative education through Title IV-D of the Education Amendments of 1968. The seven chapters of the abridged final report discuss: (1) cooperative education in general; (2) the nature of the study; (3) to what extent cooperative education is a viable career education or financial aid mechanism; (4) whether or not it is a profitable investment for the participants; (5) the limitations of expansion in the U.S.; (6) the role of federal funding; and (7) program and policy implications. (MSE)

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COOPERATIVE EDUCATION - A NATIONAL ASSESSMENT

Abridged Final Report

Covers Period of Performance

During

July, 1975 - November, 1977

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
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ABRIDGED FINAL REPORT

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1

INTRODUCTION AND OVERVIEW OF COOPERATIVE EDUCATION

Introduction

The purpose of this document is to provide policy-oriented readers with a non-technical overview of the findings of the study, Cooperative Education - A National Assessment, which has been conducted by Applied Management Sciences, Inc., for the Office of Planning, Budgeting and Evaluation (OPBE) of the U.S. Office of Education (USOE).

This study, which is concerned exclusively with postsecondary cooperative education programs, is the largest and most comprehensive of its type ever conducted. It was initiated in July, 1975 and has involved a total of more than 8,000 respondents of different types with nearly all of the data collected during the spring semester of the 1975-76 school year. Total funding for the project has been in excess of $550,000.

More information on the study's methodology will be provided in the second chapter of this publication. For a more detailed description of the study's methodology and findings, the reader is urged to consult the Final Report for the study, which is available through Education Resource Information Center (ERIC) or by contacting Ms. Ann Hershner; Office of Planning, Budgeting and Evaluation; U.S. Office of Education; 400 Maryland Avenue, S.W.; Washington, D.C. 20202.

Overview of Cooperative Education

Cooperative education is still a relatively recent phenomenon. While its roots now go back over a half a century, the real growth in the cooperative education movement only took place within the past few years, with the early 1970s as the start of a dramatic upsurge in the extent of its growth. While early precursors of the cooperative form of education, such as the apprentice system, have been in existance for hundreds or even thousands of years, the origin of cooperative education is often credited to Dean Herman Schneider who, in 1906, established a program at the University of Cincinnati in which engineering students received their education by alternating periods of classroom training with periods of full-time work in engineering companies.

Fifteen years later, in 1921, Antioch brought its liberal arts college into this new educational concept, becoming the first non-engineering institution to offer co-op. In 1924, the first industry-sponsored program was started when a cooperative education program was established at the General Motors Institute. Growth over the next four decades was very slow. In 1962, there were still only about 50 institutions offering cooperative education, primarily 4-year schools, and with the programs largely confined to the areas of engineering and business. However over the next 15 years a tremendous spurt in growth occurred, both in number of schools and in the expansion into new areas and non-traditional forms of cooperative education. By 1971 there were an estimated 250 colleges offering co-op, and in 1973, after the Title IV-D program reached its fully-authorized funding level, 576 co-op programs were operational or in the planning stage. Currently there are over 1,000 institutions of higher education with co-op programs.[1/]

Just what is a postsecondary co-op program? While there are many different types of programs, what nearly all have in common is

[illegible]

1/ Wilson, James, Undergraduate Program of Cooperative Education in the United States and Canada, Fifth Edition. The Cooperative Education Research Center, Northeastern University (Boston), 1977.

a commitment on the part of an institution of higher education to take primary responsibility for providing the student with a series of experiences in which academic and on-the-job learnings are integrated. In addition, there is often an arrangement--either informal or written--among a student, an employer, and an institution. Typically this arrangement includes the following:

- The student agrees to participate in a series of planned work experiences throughout his/her school career. He/she also agrees to comply with the school's requirements for the co-op work experience which may include participation in a seminar course, and/or the submission of a report at the end of the work experience.
- The employer agrees to retain the student for a specified period of time. The student's salary, benefits, and working hours are stipulated. Sometimes the agreement also covers the range of learning and work experiences which will be provided to the student. While not all work experiences are paid, the great majority of them are, and this study included only paid work experiences.
- The institution agrees to monitor the work experience; usually done through periodic visits to the work site, to provide the student with support in the form of counseling or remediation should needs of these types be identified, and to attempt to ensure, through contact with the employer, that the work experience is also a learning experience. Typically, the institution also agrees to grant academic credit for the work experience, and they usually charge the student for tuition in return for the academic credit and support services.

The importance of this three party agreement cannot be overstated. It is this agreement which differentiates cooperative education programs from ordinary part-time employment and work-study programs.

The key difference between co-op and ordinary part-time employment is that part-time employment is a two-party agreement between the student and the employer. Ths school plays no part in the arrangement except by sometimes assisting in the placement process. Usually, no academic credit is given, no tutition is paid, and there is no pretension that the work experience is oriented toward learning. Rather, its primary purpose is to generate income.

Similarly, in Federal work-study programs, academic credit is not given and neither the school nor the employer has agreed to structure the work experience so that it is also a learning experience (something specifically called for in the co-op legislation and in the overall philosophy of co-op). Also, the commitment to participate in work-study need not extend for more than one semester. Other differences between co-op and work-study are that in work-study programs, the government reimburses employers for a substantial portion of the student's wage (something not done in co-op), and that the number of hours per week a student can work in work-study is sharply limited (which is not the case in co-op where the student is a regular employee usually subject to the same regulations as are other regular employees).

Until a few years ago, most co-op programs focused on engineering or business occupations, concentrated on the 4-year schools (some of which required a fifth year for co-op students) in which engineering and business degrees were offered, and involved schedules in which students alternated periods of full-time study with periods of full-time work.

Recently however, the growth of co-op in 2-year schools has been such that the 2-year co-op programs now constitute almost half of all postsecondary co-op programs.[1/]

Similarly, the program areas are changing radically. As this report will show, the growth areas for co-op are in the liberal arts and in program areas associated with 2-year community colleges including the trade and industrial occupations (auto repair, air conditioning maintenance, electronics technician programs, etc.), the 2-year health occupations (licensed practical nurse, dental assistant, laboratory technician, etc.), and the 2-year business occupations (bookkeeping, clerical, non-CPA accounting, etc.).

1/ Wilson, ibid.

The program structures are changing equally rapidly. Whereas 15 years ago most co-op programs involved students alternating periods of full-time school work and full-time employment, this type of structure is now losing ground quickly with more and more schools offering parallel co-op programs in which students go to school part of the day and work part of the day. In addition, a third alternative has emerged--the so-called one-shot program--in which students are permitted to engage in a single, either full-time or part-time supervised work experience after completing their course work in their academic discipline. Several of the trade and industrial programs in the 2-year schools are structured in this manner.

Because of these wide variations in the original co-op concept, it is now very difficult to describe a "typical" co-op program.

When many educators hear the word co-op, they immediately envision an all encompassing program similar to the ones in operation at Northeastern University, Antioch College, Berea College, General Motors Institute, and LaGuardia Community College. At these schools, the great majority of the students participate in a co-op program, and thousands of students may be participating in co-op during any given semester. In schools of this type, permanent college staff members have as virtually their sole responsibility the recruitment of co-op employers and the placement and supervision of co-op students with those employers. Similarly, because so many students do participate in co-op, courses are sequenced and scheduled to accommodate the work requirements of the co-op students; and some of the schools even support research organizations having missions that promote and improve cooperative education in the United States.

However, while these types of schools operate the best known co-op programs, they form a tiny minority. Far more common are co-op programs involving less than 10 percent of the student body. These programs typically are administered either by a single individual, often called the co-op coordinator, or else the programs are independently administered within academic schools or departments. This

might result in the engineering school and the business school operating independent programs (sometimes placing students with the same employer); or in the distributive education department, the accounting department, and the secretarial studies department in a business school operating independent and possibly overlapping programs.

In either case, these smaller programs have much less visibility and do not usually have employer recruiters, student placement specialists, or researchers. Rather they tend to be operated by co-op coordinators who, on either a full- or part-time basis, run the program for the institution, the academic school, or the academic department. In these instances, this single individual recruits the employers and students, places the students, visits their worksettings, grades them, and often meets with them in a seminar setting. In addition, since particularly at the department level these persons do not spend full-time working with the co-op program, these same individuals often have teaching or other responsibilities such as working in the placement office. The exception to the above is where the programs, while relatively small when compared to the total student enrollment, are concentrated in a single unit of the institution such as the engineering school. In these cases, especially where the programs are virtually compulsory, the programs tend to be structured closer to the Northeastern/LaGuardia model with recruiters and placement specialists, a high level of visibility, etc.

Finally, there is a third type of co-op program which has been found. These programs differ from the second, most common variety in that they might not even have a student placement or employer recruiting function. These programs operate by granting academic credit for co-op to students who have found their own part-time jobs, often months or years before enrolling in co-op. These programs, perhaps better called non-programs, serve the needs of working students by providing them with academic credit for the time they would be spending at work anyway; and they serve the needs of institutions by providing them with revenue, either from tuition or ADA[1/]

[1/] Average Daily Attendance.

formulas, for which they have to provide a minimum of services. Many fine co-op programs do accommodate students who locate their own work situations. However, it is when this type of placement becomes the rule rather than the exception that the line is crossed and the program runs the risk of becoming a "non-program".

2

NATURE OF THE STUDY

I. PURPOSE

From an overall viewpoint, this study has two broad purposes. The first, and most immediate purpose was to determine the degree to which cooperative education is a viable educational and/or financial aid mechanism for institutions of higher education to adopt. The second purpose of the study was to determine the effectiveness of the Federal role in supporting cooperative education through Title IV-D of the Higher Education Act. In this section, we will examine each of these considerations separately.

A. Determine the Degree to Which Cooperative Education is a Viable Educational and/or Financial Aid Mechanism for Institutions of Higher Education to Adopt

A unique feature of cooperative education is that it is very difficult to find a sizeable number of persons who are opposed to the concept. Possibly because co-op programs can be linked to popular American concepts such as "working one's way through school" and "learning by doing," the program possesses a face validity that renders it acceptable to most educators, students, employers, and politicians alike. Yet, despite this high degree of acceptance, the program still only encompasses a very small minority of American college students, and relatively few employers are active participants.

A key goal of this study is to attempt to, at least partially, resolve this anomaly by determining whether the benefits hypothesized

for co-op programs are actually forthcoming for the participants; and, based on these findings, determine the degree to which the program can (or should) be expanded. In order to meet this goal, the study design was configured so as to include three substudies:

- An examination of the costs and benefits of cooperative education for the three key sets of participants: the student, the employer, and the institution.
- A determination of the degree to which cooperative education is a viable career education mechanism.
- An assessment of the national potential for the expansion of cooperative education in postsecondary institutions.

Roughly 60 percent of the study's resources was devoted to these three substudies. In the study's Final Report, the results of each substudy are reported in separate chapters which range in size from 55 to over 200 pages in length. In this document, however we have restructured these findings so that they cut across the substudies and address what we believe to be the major policy issues relating to postsecondary education. The titles of Chapter III through V of this report provides an overview of what we feel these issues to be.

In these chapters, the data we have collected and analyzed which relates to each of these issues will be addressed with the most policy-relevant findings emphasized.

B. Determine the Effectiveness of the Federal Role in Supporting Cooperative Education Through Title IV-D of the Higher Education Act

Title IV of the Higher Education Act of 1965 was entitled "Student Assistance." In this portion of the bill, included with sections dealing with student loan programs, the Work-Study Program, and various student grant programs, was Part D--Cooperative Education Program. In Section 451, authorization was provided:

> "...to enable the Commissioner to make grants pursuant to section 452 to institutions of higher education for the

planning, establishment expansion, or carrying out by such institutions of programs of cooperative education that alternate periods of full-time academic study with periods of full-time public or private employment that will not only afford students the opportunity to earn through employment funds required toward continuing and completing their education but will, so far as practicable, give them work experience related to their academic or occupational objective."

In Section 452, three important constraints were stipulated:

- No institution could receive a grant for more than $75,000 for any fiscal year.
- No institution receiving a grant could expend less on its co-op program than it had during the previous fiscal year.
- No institution could receive grants for program planning, establishment, or expansion for more than three fiscal years.

The final section relating to co-op, Section 453, provided for grants and contracts for training and research. However, activities conducted under this section were not included within the scope of this study.

The first section of the legislation, Section 451, relates to the goals for the program and, as such, relates more to the assessment of the effectiveness of the program (see above) than to the assessment of the effectiveness of the Federal role. Therefore, it is really Section 452, and the regulations the program established that were authorized by Section 452, which form the basis for assessing the effectiveness of the Federal role in promoting the growth of cooperative education. This was addressed in the study primarily by questioning school administrators as to the viability of the Federal restrictions and by making independent assessments--based on the cost-benefit data for the most part--as to whether the financial aid was going to the proper recipients (the schools as opposed to the students or the employers) and whether the level and the duration of the support appeared to be sufficient to promote effective planning, growth, and expansion.

These assessments formed a fourth and final substudy:

- An Assessment of the Federal Role in Promoting the Growth of Postsecondary Cooperative Education Programs.

The detailed findings of this substudy are also allocated a full chapter in the Final Report. In this document, the highlights of these findings are contained in Chapters VI and VII.

Additional findings related to these issues were also addressed in a substudy conducted under this contract which examined IV-D funding patterns by means of statistical comparisons between funded and non-funded grant applications. The results of this substudy were published under separate cover and have been highlighted in Chapter VII of this report.

II. DESIGN AND METHODOLOGY

As was mentioned in the previous section, this study has four primary areas of inquiry: an analysis of the costs and benefits of co-op for the three sets of participants, an assessment of the national potential for expansion of co-op in postsecondary institutions, an assessment of the role of cooperative education as a career education mechanism, and an assessment of the effectiveness of the HEA Part IV-D program as a Federal funding mechanism.

The analysis of costs and benefits of cooperative education was investigated primarily from the point of view of the student participant, and secondarily from the point of view of the educational institution and the employer. The most important student cost-benefit data actually came from graduates of the programs and graduates from the same schools and departments who had not participated in co-op. By comparing the earnings and career growth of the members of these two cohorts, it was possible to quantitatively assess whether the student costs for co-op participation--the largest of which is sometimes the need to stay in college for an additional year--are less than the benefits which are accrued through more successful experiences in the labor force and earnings received while in school and after graduation. When viewing cost-benefit from the standpoint of the employer, we were primarily interested in how the productivity and labor costs for the co-op workers

compared to those for regular employees doing the same jobs. In determining institutional costs and benefits, we were mainly concerned with the resources required to support co-op programs versus the income derived from tuition and Federal grants. In addition, since not all benefits can be quantified, the analyses of all three cohorts referenced benefits which were definitely present but which can't be associated with a dollar figure. With students and graduates, two important benefits of this type are satisfaction with one's career choice and with one's present job. For employers, a frequently mentioned non-pecuniary benefit is the building of a positive corporate image. For institutions, such a benefit which was frequently listed was increasing faculty members' knowledge of local business and industrial practices.

The assessment of national potential for expansion consisted of examining the feasibility for expansion in cooperative education programs. This study phase examined 1) the potential for expansion at present time and 2) the factors which may aid or hamper future expansion of cooperative education. Much of the information was provided by questionnaire items pertaining to benefits and costs of cooperative education. Responses by students, employers, and institutions as to their motivations to enter and continue with the program also provide valuable information.

Questions concerning career education were asked in order to determine whether cooperative education, as it is conducted today in postsecondary institutions, is really a viable career education experience. This was considered in the light of disparity of opinions as to what is career education. Types and qualities of experiences to which co-op students were exposed were documented. Information was also collected on how useful these experiences were in helping program graduates to select and pursue careers.

The assessment of Federal funding was aimed at exploring what effects there have been on cooperative education that are attributable to funding under the Title IV-D legislation. A major objective in this section of the analysis was to determine if Federal funds appeared to be necessary for stimulating the further development/expansion of cooperative education programs.

The first major step in designing the survey questions was to construct questionnaire items in direct response to the specific objectives of this study. This approach was pursued individually for the four study areas.

The next step was to convert questionnaire items which were organized by study area into a form in which questions were specifically addressed to particular types of respondents. Often, to help determine the validity of our data or to determine how different types of participants viewed the same question, the same item was asked of several different sets of respondents.

The final set of respondents used in the study and the number of responses received from each set were as follows:

Respondent Sets	
Senior Academic Officials	106
Fiscal Officers	102
Co-op Education Directors or presidents designates	106
Co-op Faculty Members	221
Non-Co-op Faculty Members	206
Co-op Students	1561
Non-Co-op Students	2304
Co-op Employers	236
Non-Co-op Employers	82
Co-op Graduates	1019
Non-Co-op Graduates	2212
Total Respondents	8185

These respondents were affiliated with 80 schools which were visited and 32 in which key administrators were queried by mail. The 112 institutions of higher education were broken out as follows:

48 co-op institutions receiving IV-D funding

16 co-op institutions not receiving IV-D funding

32 co-op institutions not receiving IV-D funding (queried by mail)

16 institutions not offering co-op programs

The emphasis on selecting institutions which were receiving IV-D funding was directly related to the funding authorization for this study, and was necessary if the fourth set of objectives were to be met. However, as pointed out in several sections of the Final Report, while our selection of schools provided an excellent subsample of the universe of IV-D-funded institutions (see Exhibit 2.1), it resulted in a skewing of the sample vis-a-vis the universe

EXHIBIT 2.1: COMPARISON BETWEEN IV-D SAMPLE AND IV-D UNIVERSE

	Federal Funding Patterns IV-D Universe	Site Visit Sample IV-D Schools
IV-D Grant size	$25,715	$25,732
Public control	67%	77%
Private control	37%	23%
Co-op Enrollment	234	378

of all postsecondary co-op programs. The reason for the skewing is that the bulk of the IV-D funding has gone to the newer co-op programs, and this led to the older and often stronger programs being under-represented. Therefore, the findings in the later chapters of this report may well be viewed as being extremely conservative assessments of the viability of the co-op concept since many of the most successful programs such as those at Northeastern University, LaGuardia Community College, Antioch College, and Berea College were not included.

In addition to these breakouts, the sample was also stratified so that half of the schools were located in States with above-median unemployment, and half were in States with below-median unemployment. This was done so that the effects of the co-op program could be separated, at least partially, from the effects of a region's employment level.

Once at the school, an additional sampling variable employed was program area. In order to allow aggregation of economic data, the study only examined co-op programs from the following five academic areas:

- Business and Management, including Business Administration and secretarial science;
- Engineering/Architecture, including engineering technology and mining;
- Health professions, including paramedical technologies;
- Liberal Arts, including humanities and fine arts, physical sciences, mathematics, social and behavioral sciences; and
- Trade and Industrial, including applied arts and crafts and other vocational technologies.

Because the economic prospects and the working conditions are so different for persons graduating from programs in these different areas, nearly all of the student data generated by the study is broken out in this manner.

Field team interviewers began the data collection phase March 29, 1976 and completed data collection in August of the same year.

The graduate samples were constructed by the field teams obtaining a listing from each site which contained names and last known addresses of 1970 and 1973 graduates by majors. Co-op schools were asked to provide a list of co-op and non-co-op graduates; if there were more than 50 names per year in the category for each program area, a random sample was drawn. IHEs which did not have co-op graduates in 1973 were not included. Non-co-op schools were also requested to compile a listing of up to 50 names per area for each of the two years.

The mailout to each graduate listing was conducted in three phases. These consisted of an initial certified mailout, a follow-up mailout, and a final certified mailout.

The analysis of the data collected by this project basically followed the procedures outlined in the data analysis plan developed for this project. This plan presents the dependent and independent variable groups for the cost-benefit, national potential, Federal effectiveness and career education components of this study; the hypothesized structural interrelationships; and the modes of analysis employed. Based on the actual distributions found in the data, some modifications were made to the tests of hypotheses outlined in the plan.

Most of the statistical analyses were carried out using a single software package, SPSS (Statistical Package for the Social Sciences). For the rate of return analyses, a previously developed Applied Management Sciences proprietary software package was utilized.

3

WHAT IS THE ESSENCE OF COOPERATIVE EDUCATION?

In this chapter, we will examine the data resulting from the study that relates to two central issues:

- To what extent is cooperative education a viable career education mechanism?
- To what extent is cooperative education a viable financial aid mechanism?

I. TO WHAT EXTENT IS COOPERATIVE EDUCATION A VIABLE CAREER EDUCATION MECHANISM?

The 1970s have seen a great arousal of interest in the promotion of career education in American schools. While there is no commonly accepted definition of what career education really is, it is generally accepted that a career education experience is one that makes the learner more aware of the nature of work in the United States, more capable of reaching realistic career decisions and more capable of securing and retaining a job. In assessing the degree to which cooperative education in postsecondary institutions is helping students master these varieties of learnings, we relied heavily on comparisons of attitudinal responses made by co-op versus non-co-op students, on comparisons in worker performance made by employers who have hired co-op and regular workers to do the same types of jobs, and on comparisons relating to job satisfaction and job responsibility levels made by co-op versus non-co-op graduates.

We will also examine in this discussion the degree to which cooperative education provides a link between classroom and work experiences. If no such link exists, then the student might be served just as well, and at possibly lower cost, by transferring the institutional resources allocated to co-op to the school's placement office and attempting to ensure that students have a wide variety of part-time or temporary jobs from which to choose. If the link does exist, then cooperative education can well be considered to provide educational benefits not available to students who merely work part-time.

A popular conception that is reflected in several pieces of legislation, and specifically in the 1976 amendments,[1/] is that college should be a period during which one can explore different occupational areas. Ideally, from a career education perspective, this exploration should involve a combination of academic experiences and work experiences.

When co-op and non-co-op students were asked to assess the extent to which they thought the subject they were studying in school would be useful in their careers after college, nearly identical ratings were obtained from each group with roughly two-thirds of each cohort rating their academic experiences as being "somewhat useful." Only 3 percent of each group rated their academic experiences as being "very little or not at all useful." Since co-op and non-co-op students typically take the same courses from the same faculty, this first finding can be used to support the contention that the two student groups were nearly identical in their attitudes towards the college academic experience and that the members of both groups had high expectations and a high degree of satisfaction vis-a-vis the occupational utility of their courses of study.

While students saw no difference in the relevance of their academic experiences, sharp differences appeared when questioned as to whether their work experience while in school was related to their major area of study. Here 76 percent of the co-op students said they had "jobs directly related" while only 41 percent of the non-co-op

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[1/] See, for instance, Section 129 of Public Law 94-482.

students who had worked during the past year gave the same response. *This clearly shows that a student has a far better chance of obtaining a relevant job, while in school, by enrolling in a co-op program. This difference was found within each of the five occupational areas.*[1/]

Co-op students also stated significantly more often than non-co-op students that a very important advantage of working while in college is that it provides an opportunity to apply the subjects studied to actual work situations.

We also looked at the learning component of the work experience itself. We did this by asking co-op and non-co-op students to rate the level of improvement in students' job skills from the beginning to the end of their college program. Here again there were significant differences with over 55 percent of the co-op students rating the improvement as being excellent or above average, while only 38 percent of the non-co-op students gave the same rating.

Within the co-op group, the highest improvement ratings were in the health and T&I cohorts, and the lowest in the liberal arts cohort.

Students were also asked to rate the specificity of their career goals. Here again there were significant differences with 61 percent of the co-op students reporting they had already chosen a specific occupation with only 51 percent of the non-co-op students providing the same response. This of course may be a "chicken or the egg" situation since it may be that students who have definite career goals are those that are more apt to enroll in co-op, rather than the other way around.

Career awareness and career choice was also examined from the faculty members' perspective. Over 88 percent of the co-op faculty members surveyed felt that cooperative education had increased their own awareness and understanding of the skills required for occupations

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[1/] Italics will be used throughout the body of the report to denote policy relevant findings or summaries.

related to their program area, and 48 percent said it had done so considerably. While over half indicated that co-op had caused changes in the curriculum, most of these appeared to be changes in course sequencing and scheduling or in the addition of special career development courses. They very infrequently listed specific changes aimed at making the course more relevant to the students' work experience.

Graduates were also queried relating to the relevance of their co-op experiences while in school. The exhibit below summarizes their responses.

EXHIBIT 3.1: THE EFFECT OF PARICIPATION IN A CO-OP PROGRAM ON ABILITY OF GRADUATE TO OBTAIN CURRENT JOB

(Percent of Co-op Graduates Indicating the Following Reasons*:)

Helped me to obtain a better-paying job	40.7% (355)
Helped me to find a career to my liking	39.7% (346)
Currently working for one of my co-op employees	28.9% (252)
Shortened the time it took to find a job after graduation compared to fellow students not in co-op	26.0% (227)
Not helpful as far as I can tell	22.4% (195)
Not currently working	5.0% (44)

* Percents total more than 100 since graduates could indicate more than one effect.

These attitudes are substantiated by the relationship between the graduates' college major and their first job. Significantly more co-op graduates were able to obtain jobs related to their major (58%) than were non-co-op graduates from the same schools and the same majors (45%). Only 12 percent of the co-op graduates rated their first jobs as being totally unrelated, while 27 percent of the non-co-op graduates gave their first jobs that rating.

In terms of their present position, there were small but still statistically significant differences with 52 percent of the co-op graduates rating themselves as "highly satisfied" with their present positions, while only 48 percent of their non-co-op counterparts gave themselves the same rating.

In assessing the relative importance of different features of cooperative education from a retrospective standpoint, co-op graduates ranked the features in the following order:

1. exposure to world of work (most important);
2. skill development;
3. co-op earnings; and
4. academic training (least important).

When asked which features of their overall college education were felt to be the most important, the following very interesting comparison between co-op and non-co-op graduates emerged (see Exhibit 3.2):

EXHIBIT 3.2: FEATURES OF COLLEGE EDUCATION WHICH GRADUATES FELT WERE MOST IMPORTANT

% of Graduates Ranking Area as First in Importance: 1/	Co-op Graduates	Non-Co-op Graduates
College enabled me to develop useful skills especially related to my career goals	48.5% (398)	44.9% (868)*
College provides a valuable general academic education	29.9% (239)	49.5% (979)**
College education provided valuable exposure to world of work	26.7% (215)	13.2% (246)**

1/ Percents total more than 100 since some graduates rated more than one area as first in importance

* = P<.05
** = P<.01

This exhibit suggests the heavier career education orientation of a cooperative education program as opposed to a traditional academic program.

To summarize the data we have presented in this section, from the career education perspective, a postsecondary program that provides the student with a cooperative education experience is far more valuable to the student in terms of career selection and preparation than the same program would be without the cooperative education component.

Since the study data were also examined to determine whether these findings differed significantly on the basis of sex or race, we can also report that practically no differences based on these factors were found and that the career education aspects of co-op appear to be benefiting male and female students, and minority and non-minority students to equivalent degrees.

In terms of program areas, the most intensive career education experiences appeared to be linked to students in the most applied areas--health and T&I--with less intensive experiences accruing to students in the business and engineering cohorts and the least intensive experiences being enjoyed by students from liberal arts backgrounds.

In the midst of these highly positive findings relating to the viability of co-op as a career education mechanism, one fact must be noted. Examination of these data shows that the component of the co-op system that provides much of the career education is the employer. While it is certainly advantageous for the students to learn career education at the work-place, and this is a definite benefit of co-op versus non-co-op participation, the data does not indicate that the schools necessarily play a complementary role in the career education process.

The school has the potential to contribute to the career education aspects of cooperative education by providing co-op students with intensive aptitude testing, counseling, and placement service. According to the data we collected, there appears to be few if any differences in the quality or quantity of these services being provided to co-op versus non-co-op students. Both groups rated the quality of these services lower than they rated any other services they received from their schools. Also, while nearly all co-op programs

reported that they provided counseling to students, the median hours of counseling received by students--according to the co-op directors--was six hours for co-op students and three hours for non-co-op students. *Given the students' concern for career preparation as was reported earlier, it would appear that part of the schools' obligation to its co-op students should be more adequate provision of these services.*

II. TO WHAT EXTENT IS COOPERATIVE EDUCATION A VIABLE FINANCIAL AID MECHANISM?

There was a somewhat schizophrenic quality to the data relating to the viability of co-op as a financial aid mechanism which was collected by this study. *On one hand, all sets of participants in co-op programs--including students, faculty, and school administrators--gave relatively low ratings to financial aid considerations as a reason for participating in cooperative education programs. On the other hand, the study revealed that co-op earnings were essential to the continued schooling of many students and represented a financial aid source which institutions might be hard pressed to replace if co-op programs were to be discontinued. Actually, there is no contradiction because financial aid can be viewed as a valuable by-product of co-op, even though it does not always provide the impetus for enrolling in the program.*

There were several questionnaire items which revealed the low status of the financial aid aspects of co-op. As shown in Exhibit 3.3, when students were asked to rank reasons for entering co-op on a five-point scale, the statements relating to income were at the bottom with relatively few students rating these considerations as being "very important" (the highest rating). It was the career education motives which were uniformly ranked the highest. As shown by the breakouts on that exhibit, these relative rankings held even for minority

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[1] The data in this section was obtained primarily from sections of questionnaires administered to students, faculty, and administrators which were directed at obtaining information on their perceptions of co-op as a financial aid mechanism. Quantitative findings related to this same issue are included in the cost-benefit analysis chapter of this report.

EXHIBIT 3.3: STUDENT'S REASONS FOR ENTERING COOPERATIVE EDUCATION PROGRAMS BY STUDENT CHARACTERISTICS

	% of Students Rating Reason as Very Important For:										Parents' Income:			
	All Students	Males	Females	Minority	Non-Minority	Business	Engi-neering	Health	Trade & Indust.	Liberal Arts	Less Than $5,500	$5,500 -9,999	$10,000 -19,999	$20,000 or over
To acquire skills and experience related to my career objectives	77% (1146)	75% (715)	83% (431)*	81% (241)	77% (892)NS	80% (445)	79% (302)	80% (48)	60% (64)	77% (244)*	80% (161)	76% (211)	78% (485)	77% (216)NS
Felt it would make it easier for me to get employment after graduation	67% (884)	62% (591)	73% (372)*	72% (211)	64% (747)*	66% (370)	72% (275)	72% (43)	56% (59)	61% (188)*	69% (139)	64% (177)	67% (412)	68% (188)NS
To make my educational experience more rewarding	65% (960)	61% (587)	71% (372)*	74% (225)	62% (722)*	65% (364)	65% (249)	73% (43)	44% (46)	70% (225)*	72% (148)	65% (181)	62% (385)	66% (185)*
To prepare me for a changing job market	54 % (793)	50% (481)	61% (312)*	64% (188)	52% (595)*	60% (334)	53% (200)	46% (27)	44% (46)	52% (162)*	60% (121)	55% (160)	53% (328)	54% (149)NS
Additional income was absolutely necessary to continue education	34% (495)	36% (347)	29% (148)*	43% (129)	31% (362)*	29% (161)	44% (168)	23% (13)	31% (32)	32 % (101)*	41% (83)	39% (109)	33 % (204)	22% (61)*
Recommended by persons I respected	31% (457)	30% (283)	34% (174)NS	34% (100)	31% (353)NS	31% (174)	31% (117)	40% (22)	29% (30)	30% (94)NC	36% (72)	31% (84)	30% (186)	31% (84)NS
Wanted additional income although it was not absolutley necessary	20% (284)	18% (168)	23% (118)NS	24% (69)	19% (211)NS	23% (124)	16% (59)	27% (15)	21% (22)	17% (50)*	26% (52)	20% (55)	18% (103)	18% (50)NS

* = p. ≤ .05
NS = Not statistically significant

and low-income students, who might have been expected to give more priority to the financial aid aspects of the program.

Similarly, when the different participants in co-op programs were asked to rank the various purposes of co-op on a similiar five-point scale, "student financial support" received far fewer "very important" rankings than did "career awareness," "special occupational preparation," and "manpower for employers." Interestingly, as an examination of Exhibit 3.4 will show, the relative positions of these purposes were the same for administrators, faculty, and students. This indicates a high degree of uniformity in the way that co-op programs are perceived vis-a-vis their purposes and benefits.

Further evidence of this was obtained in asking college administrators and faculty to compare reasons for administrative support of co-op. Here again, as shown in Exhibit 3.5, financial aid was uniformly rated below career education considerations.

Yet, the study also uncovered ample evidence relating to the importance of the financial aid aspects of co-op. Perhaps the single most important piece of evidence was obtained by asking students what their alternative sources of income would be (if any) if they were not participating in co-op programs. The complete set of responses is shown in Exhibit 3.6. What is particularly interesting is that, of the entire sample, only 6 percent indicated that no replacement of income would be necessary, and that this group was balanced off by the 6 percent of the students who stated that they would not attend college without co-op earnings. Examination of the individual cohort breakouts clearly indicates that minority and low-income students--the most likely to need aid--would be the most unlikely to be able to replace co-op earnings by means of parental support, savings, or other student financial aid. This indicates that these sources were probably already being tapped to the greatest possible extent. What is also interesting is that among all groups, less than 40 percent stated that they would replace co-op earnings with earnings from non-co-op jobs. This again indicates that while the co-op earnings are needed, the co-op experience is viewed as being far more than simply an income generating device.

EXHIBIT 3.4: PURPOSES OF CO-OP
(Percent Rating Purpose as "Very Important")

	Senior Academic Officials	Co-op Directors	Co-op Faculty	Non-Co-op Faculty	Co-op Students	Non-Co-op Students*
Career awareness	88	89	88	86	78	66
Special occupational preparation	86	97	87	84	78	67
Manpower for employers	55	59	61	49	54	46
Student financial support	42	39	42	48	51	50
Student social development	41	65	53	43	55	46
Institution's public image	33	45	40	28	36	33
Institution's use of resources	12	17	28	20	33	34

*Those students currently not enrolled in co-op, but have indicated that they are considering participation.

3.10

EXHIBIT 3.5: REASONS FOR ADMINISTRATIVE SUPPORT OF CO-OP
(Percent Rating Reasons as "Very Important")

	Senior Academic Officials	Co-op Directors	Faculty
Integrating academic and career development	97%	86	90
Enhancing student motivation	89	81	88
Expanding job placement	76	59	61
Keeping curriculum up-to-date	67	58	76
Student financial aid	44	27	46
Expanding enrollment	23	30	32
Funding for institution	16	20	34
Decreasing class space/function	6	3	6

EXHIBIT 3.6: CO-OP STUDENTS' ALTERNATIVE FINANCIAL SOURCES IF THEY SHOULD NOT PARTICIPATE IN CO-OP PROGRAMS BY STUDENT CHARACTERISTICS

% Indicating Alternative Source Would be Used:[1/]

						Parents' Income:			
	Students	Minority	Minority	Male	Female	Less Than $5,500	$5,500 -9,999	$10,000 -19,999	$20,000 and over
Earnings from non-co-op jobs	37% (584)	35% (110)	38% (468)[NS]	41% (410)	31% (173)[**]	34% (72)	42% (124)	37% (241)	39% (114)[NA]
Parental support	27% (415)	19% (60)	29% (350)	24% (236)	32% (179)[**]	17% (36)	18% (53)	28% (168)	44% (128)[**]
Savings	20% (305)	14% (45)	21% (256)	19% (170)	21% (304)[NS]	14% (29)	14% (41)	22% (142)	23% (68)[**]
Other student financial aid	14% (220)	24% (75)	11% (140)	14% (142)	14% (78)[NS]	25% (54)	21% (61)	12% (80)	4% (12)[*]
Student loans	14% (222)	17% (54)	14% (165)[NS]	16% (164)	10% (57)	13% (27)	19% (55)	16% (103)	10% (29)[**]
Would not attend college without co-op earnings	6% (98)	9% (29)	6% (69)	7% (72)	5% 926)[NS]	10% (21)	7% (20)	6% (38)	3% (10)[*]
No replacement of income would be necessary	6% (95)	4% (13)	7% (81)[NS]	6% (60)	6% (35)[NS]	4% (12)	6% (37)	6% (37)	7% (21)[NS]

** = p .01
* = p .05
NS - Not statistically significant

1/Percentages total more than 100% since students could indicate more than one alternative source.

3.12

Exhibit 3.7 shows how students from different backgrounds rated the financial aid aspects of co-op in terms of its importance to themselves. The financial support purposes of co-op is significantly more important among males, minority students, engineering students, students from lower parental income backgrounds, students attending 4-year schools, and students at privately-controlled institutions. Of course, many of these characteristics are strongly interrelated--engineering students are primarily males, and minority students more often come from lower parental income backgrounds than non-minority students. In fact, it is the higher importance given to financial support by engineering students that accounts for the apparent difference between males and females. The higher importance of this aspect of co-op for engineering students is partly related to the fact that a higher proportion of engineering programs than any of the other program areas are in privately-controlled schools, which are much more expensive to attend. Both ethnicity and parental income have separate effects on this rating, although parental income has the stronger impact.

At the institutional level, the use of co-op as a financial aid mechanism appears to be viewed as being less important than other such mechanisms. The senior academic officials were asked to rate the significance of seven categories of financial aid in terms of their impact in helping the institution accept qualified but financially needy students. As shown in Exhibit 3.8, earnings from co-op jobs were rated least often as having a significant impact.

It would seem that this is largely due to the fact that co-op generally involves only a small proportion of the students at the institution. The average co-op program contains only about 10 percent of the total school enrollment. Thus, it would seem reasonable to hypothesize that as the proportion of the school's enrollment in co-op increases, the effectiveness of co-op as a financial aid mechanism would also increase. To test this hypothesis, the correlation between proportion of school enrollment in co-op and the average amount of financial aid per student used by the school was computed. Overall,

EXHIBIT 3.7: IMPORTANCE OF FINANCIAL SUPPORT AS PURPOSE OF CO-OP BY STUDENT TYPES

		% Rating Provision of Financial Support as Very Important	
Sex:	Male	53	
	Female	49	p<.01
Ethnicity:	Minority	60	
	Non-minority	50	p<.01
Program Area:	Business	49	p<.01
	Engineering	64	
	Health	42	
	Trade - Industrial	49	
	Liberal Arts	45	
Parental Income:	Under $5,500	58	p<.01
	$5,500 - $9,999	57	
	$10,000 - $19,999	52	
	$20,000 and over	41	
Level of school attended:	4-Year	59	p<.01
	2-Year	45	
Funding Status:	IV-D	54	p<.01
	Non-IV-D	47	
Type of Control:	Public	49	p<.01
	Private	66	

EXHIBIT 3.8: IMPACT OF FORMS OF STUDENT SUPPORT IN ADMITTING NEEDY STUDENTS

Percent of Senior Academic Official's Rations as:

	Significant Impact	Some Impact	Little or No Impact
Federal scholarship of grant	79.4% (50)	15.9%(10)	4.8%(3)
State scholarship or grant	43.5% (27)	35.5%(22)	21.0%(13)
Guaranteed student loan	50.0% (30)	33.3%(20)	16.7%(10)
Earnings from co-op employment	36.5% (23)	55.6%(35)	7.9%(5)
Earnings from work-study employment	61.3% (38)	38.7%(24)	0
Earnings from other employment	53.2% (33)	45.2%(28)	1.6%(1)

this hypothesized relationship did not appear. However, it was noted that public and private schools differed vastly in their use of financial aid monies. Private schools used nearly three times the amount of financial aid per student on the average than did publicly-controlled institutions ($980 vs. $329). Because of this discrepancy, it was decided to examine the hypothesized relationship separately for public and private IHEs. For the private schools, using large amounts of financial aid money, the per student use decreased significantly as the proportion of students in co-op increased. The correlation coefficient was -.493 which is statistically significant at the 99 percent confidence level; for public schools, virtually no correlation was found (r = .027). *Thus, it appears that co-op does, at least for those types of schools such as the privately-controlled that use large amounts of financial aid per student, serve as a viable and effective financial aid mechanism for the institution as a whole as well as for the individual student.*

The financial aid aspect of cooperative education has been given high priority by the Federal government. This is attested to by the Title IV-D program authorized under Title IV, which is the Student Assistance Section of the Higher Education Act.

However, under the 1976 amendments, cooperative education has been moved out of Title IV and into a new section, Title VIII. While this step appears to reflect the popular perceptions of the program, the evidence shows the utility of co-op as a financial aid device.

There is an entirely different perspective which can also be used to assess the viability of co-op as a financial aid mechanism. In this perspective, we ask the question: If financial aid is a primary objective of the Federal support for co-op, might it not be more cost-effective to allocate the money to students in the form of grants or loans?

In 1975-76 there were approximately 200,000 students participating in cooperative education programs, 70,000 of whom are in programs that are receiving IV-D funding. Total IV-D funding is running at an annual level of about $10,000,000, and the students enrolled in IV-D programs are averaging about $1,900 annually in co-op earnings. The question is whether an alternative use of these IV-D funds (say, for student loans) would be more effective than their current use in the co-op programs. If low interest loans were made to co-op students in amounts equivalent to their present co-op earnings, how would the annual interest cost and the annual default cost compare with the total sum currently being spent in the form of IV-D funding?

Considering only the students enrolled in IV-D funded programs,[1/] the annual interest cost on the $133,000,000 in student loans ($1900 X 70,000) is calculated as the difference between the market rate of interest (assumed to be 12%) minus the rate of interest

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1/ This provides an a fortiori argument for the co-op program since no IV-D funds are being expended on behalf of the other 130,000 students.

actually charged the students (assumed to be 7% times the loan principal, or $6,650,000 ($133,000,000 X .05). The typical default rate on student loans has been fluctuating between 8 and 14 percent. Taking the lower default rate, the annual default cost on a total loan amount of $133,000,000 would be $11,384,800 (i.e., 8% of the total loan principal plus the 7% interest lost on the total default). Thus, the total annual cost of the student loans would be $18,034,800 (i.e., $6,650,000 plus $11,384,800).[1/]

Clearly, the cooperative education program, with its $10,000,000 in annual funding, is a more effective means of providing student financial aid than an equivalent loan program. In fact, the loan default rate would have to be as low as 2.35 percent before the effectiveness of a loan program would be equal to that of the IV-D program given the same interest rate assumptions. On the other hand, even if the student loans were placed at the prevailing market rate of interest, the minimum default rate assumption of 8 percent would lead to a default cost of more than $10,000,000 as calculated above. Considering the other 130,000 cooperative education students, for whom the costs to the Federal government are negligible,[2/] a loan program would have to have a zero default rate and charge the full market interest rate to approach the financial effectiveness of this part of the co-op program. *In summary then, the cooperative education program is a very*

[1/] These figures were based on repayment of the loans beginning immediately after graduation. Actually, under the national student loan program regulations, repayment does not have to begin until nine months after graduation. Therefore, assuming that many graduates do not begin their payments until after the nine month period, the actual cost to government is higher than is reflected in the above calculations, and this makes co-op an even more attractive alternative.

[2/] However it should be realized, as stated elsewhere, that some of the students may be in programs receiving support for co-op through other Federal legislation, particularly the Vocational Education Act Amendment which provides support to 2-year institutions under several of its parts.

effective means of providing financial aid to students. Even when Federal support is provided to start co-op programs using IV-D funds, the program is still more effective than a loan program and cannot be matched by any other financial aid mechanism after the program becomes self-supporting.

4

IS PARTICIPATION IN CO-OP A PROFITABLE INVESTMENT FOR THE PARTICIPANTS?

The purpose of this chapter is to evaluate and compare the costs and benefits of cooperative educational programs from the point of view of all major participants. The major part of the analysis is concerned with the impact cooperative education has upon the student/graduate. However, the importance of the co-op program is also discussed from the perspective of the educational institution and the employer of co-op students.

The sections of Chapter 4 are as follows:

- Section I: Rate of Return and Graduate Analysis
- Section II: Analysis of Student Costs and Benefits
- Section III: Analysis of Institutional Costs and Benefits
- Section IV: Analysis of Co-op Student Employer Costs and Benefits

Section I of this chapter makes use of rate of return analysis in order to measure the monetary net benefits of cooperative education to the prospective co-op participant (i.e., recent high school graduate) over the course of his/her lifetime. Elements of costs and revenues are adjusted and summed to provide a lifetime stream of net benefits for the individual. These streams are compared on the basis of a variety of educational and demographic characteristics. With this technique, a determination is made regarding the relative net benefits which accrue to the co-op participant as opposed to the individual following the more traditional non-co-op educational approach.

In addition, analysis will focus on specific parts of the co-op participants' schooling and career experience, including many non-pecuniary aspects. Qualitative analyses measuring job satisfaction, fulfillment of career plans, and speed of career advancement are also examined relative to co-op participation.

Section II considers in detail the costs and benefits faced by the co-op and non-co-op student. While Section I includes student costs as an element in the rate of return analysis, Section II extends the description of the student experience by examining extensive breakdowns of expenses and revenues as differentiated by co-op versus non-co-op student participation. Additionally, significant analysis is undertaken regarding attitudinal differences in educational goals, educational quality, and job preparedness as they differ for co-op and non-co-op students.

Section III explores the impact of co-op programs on the educational institution. The goal of this section is to identify the cost differentials inherent in the education of a co-op student as opposed to a non-co-op student.

Section IV explores the various costs and benefit elements of co-op education as they affect the employer of co-op students. The employer is viewed as an investor in co-op education. Employer costs are concerned with the training and evaluation of students. In return for this expense, the employer expects an immediate and a future return on this investment in the form of a readily available, trained labor pool. In addition, co-op investment may be viewed as being of positive benefit in terms of public relations.

I. RATE OF RETURN AND GRADUATE ANALYSIS

A. Introduction

The purpose of this section is to present results of the estimation of net benefits which accrue to the high school graduate as the result of a successfully completed college course of study.

The financial parameters of the college experience are compared with the earnings experience of a high school graduate who does not enter college. That is, the decision being evaluated is that faced by a recent high school graduate who must decide upon a college education. The high school graduate contemplating further formal education is endowed with an income stream as a result of the high school education. This endowment, or earnings stream, is foregone by the individual when entering college. In the postsecondary school years, it is a cost of education, and in the graduate years, its inclusion is necessary to compute the incremental graduate earnings attributable to the postsecondary education investment being evaluated.

In addition, the net benefits as calculated above for alternative college programs are directly compared. In this case, the net benefits of the one college program (e.g., co-op) will serve as the opportunity cost of the other (e.g., non-co-op), and vice versa, but will still be evaluated from the point of view of the recent high school graduate. That is, the net benefits of one of two mutually exclusive investment alternatives are compared so that a choice between the two can be made by a recent high school graduate.

B. Results of Rate of Return Analysis

The Final Report for this study reports on the use of three variations of rate of return analysis which were employed to measure different net benefit streams for different sets of participants: Internal Rate of Return, Present Values, and Fisher's Rate of Return. The description of these three approaches and detailed reporting on the results required approximately 40 pages of extremely complex text in the Final Report. In this report, we will summarize the results of the Fisher's Rate of Return analysis, which proved to be the most useful of the three techniques.

Fisher's Rate of Return analysis was first used to assess the viability of co-op programs, as compared to non-co-op programs, for students:

- in the five program areas;
- of different sexes; and

- in 2-year programs vs. 4-year programs vs. 5-year programs.

The results of these comparisons are shown in Exhibit 4.1 below.

EXHIBIT 4.1: FISHER'S RATE OF RETURN OVER COST FOR COOPERATIVE EDUCATION RELATIVE TO NON-COOPERATIVE EDUCATION BY PROGRAM LENGTH, SEX, AND DISCIPLINE AREA.

COHORTS IN WHICH CO-OP IS PREFERRED*

- 5-Year Programs

  Engineering and Architecture (males)
  Business and Management (males and females)

- 4-Year Programs

  Engineering and Architecture (males)
  Business and Management (males and females)
  Liberal Arts (males and females)

- 2-Year Programs

  **Business and Management (males)
  Health Professions (females)
  Liberal Arts (males)

COHORTS IN WHICH CO-OP IS NOT PREFERRED

- 2-Year Programs

  Engineering and Architecture (males)
  Liberal Arts (females)

COHORTS IN WHICH RESULTS WERE INDECISIVE

- 2-Year Programs

  Business and Management (females)

* Preferred at all interest rates up to 35 percent unless otherwise noted.

** Preferred if interest rate is 10 percent or less

All five of the available comparisons for 4-year programs showed that the cooperative education option is more profitable at all interest rates up to 35.0 percent. This result remains the same regardless of which sex or discipline area is being considered. Co-op education is definitely more rewarding for 4-year programs. However,

the same cannot be said for the 2-year program. Only three of the six available comparisons show the co-op program to be dominant, with one of these (Business & Management for males) only being preferred up to an interest rate of 10 percent or less, while two other comparisons indicate the inferiority of the co-op program.

The reason for these mixed results is probably due to the vocational aspect of 2-year programs and the relatively short period of instruction during which co-op participation may alter benefits. In other words, the curricula differences between co-op and non-co-op 2-year programs are probably slight to begin with, and the short program length does not allow what differences there may be to differentially influence the net benefit streams to any substantial degree. For example, 2-year non-co-op programs are often vocational in nature with appreciable actual or simulated "on-the-job" experience which closely resembles the configuration of a typical co-op program. Thus, there may be little actual difference between such non-co-op programs and co-op programs, and what little difference remaining has only two years to impact on the lifetime experience of the participant. For example, most males in the two-year Engineering and Architecture cohort were probably in a drafting/mechanical drawing program which is highly vocationally oriented regardless of whether co-op participation is elected.

One of the more interesting results is the comparison of 5-year co-op and 4-year non-co-op cohorts of the same sex and discipline area. This comparison demonstrates the financial viability of an individual participating in a co-op program rather than a non-co-op program, even though it requires an additional year of school. The added benefits which accrue to the co-op participant more than compensate for the added costs of an additional year of school at all interest rates up to 35.0 percent.

In sum, Exhibit 4.1 demonstrates that the differential in financial rewards between co-op and non-co-op programs increases with program length. While there were mixed results for 2-year programs,

co-op education was consistently dominant over non-co-op at the 4-year level. This indicates that, over the longer time period, co-op/non-co-op curricula differences do affect the graduate net benefit streams in favor of co-op education. In fact, this differential becomes substantial enough to allow 5-year co-op programs to dominate 4-year non-co-op programs--more than covering the costs of the additional year. These results hold for all sex and discipline area parameters where results were available.

Another possible explanation for the greater payoff to co-op in 4-year programs is the use of the co-op experience as a screening device for entry level jobs for 4-year college graduates, but not for 2-year graduates. If co-op experience is used by employers as a means of differentiating among applicants with otherwise equivalent 4-year college training, the better jobs are likely to go to the co-op graduates. This hypothesis is supported by data presented in Section IV showing that employers often value co-op student employees more highly than they do regular employees performing similiar functions. Therefore, to the extent that co-op participation differentiates the college experience better in a 4-year program than in a 2-year program (see discussion above) and to the extent this participation is used by prospective employers to screen 4-year program graduates and not 2-year program graduates, the financial reward from co-op participation will be seen to increase with program length.

Fisher's Rate of Return Over Cost calculations were also calculated for cohort comparisons between discipline areas. With these calculations, pairs of discipline areas can be ranked according to their profitability at differing rates of interest, and changes in rankings observed as sex, co-op/non-co-op, and program length parameters vary.

Examination of these data indicated quite clearly that the choice of Liberal Arts is inferior (i.e., never preferred at any discount rate below 35%) to that of any other program area. This result is invariant with respect to sex or program length. The only

other results of interest concerned the Business & Management program. In particular, Business & Management is always preferred to other discipline areas with a program length of 4-years, regardless of the sex of the student. For 2-year programs. however, the results with respect to Business & Management are mixed (i.e., the choice depends on the graduate earnings assumption chosen and the relevant market rate of interest). Finally, the 5-year Business & Management investment option for males was found to be less rewarding than Engineering & Architecture at all rates of interest above 4.6 percent. Obviously, Business & Management fared less well at the 5-year level than it did at either the 2-year or the 4-year level.

Reviewing the same analyses of non-co-op discipline area comparisons again demonstrated quite clearly the less preferred position of Liberal Arts as an investment choice. Since similar results were observed for co-op comparisons, it is clear that co-op participation has little to do with the ranking of Liberal Arts as an investment choice, and such a result is expected when comparing non-specific educational training (Liberal Arts) with specific training (other discipline areas).

Business & Management did not fare as well relative to other discipline areas for non-co-op participants as it did for co-op participants. In particular, Engineering & Architecture is preferred over Business & Management for both male 2-year and 4-year non-co-op options, and Business & Management declines in preference relative to 2-year female Health Professions. *Clearly, participation in cooperative education benefits both males and females in Business & Management relative to other occupational choices.*

Trade & Industrial proved to be preferred to both Engineering & Architecture and Business & Management as well as Liberal Arts for the 2-year, non-co-op male cohorts. This result is no doubt due to the fact that Trade & Industrial, being the most vocationally oriented discipline area, is the most productive within the short 2-year program span. Health Professions and Liberal Arts ranked fourth and

last, respectively, for the opposite reason. It is also clear that Engineering & Architecture again dominates Business & Management. On the other hand, the position of the Trade & Industrial program for the 4-year non-co-op male is unclear due to multiple graduate earnings specifications.

Three points should be stressed in summary. First, the results clearly show the failure of Liberal Arts programs to be competitive in any comparison, regardless of any other parameter values. Second, different programs provide different returns for different populations. For example, for males in 2-year colleges, Trade & Industrial is generally the most profitable non-co-op options; while for females in 4-year non-co-op programs, Health Professions are clearly more profitable. Additionally, for females in 2-year programs, it is unclear whether Health Professions or Business & Management is the most profitable. Third, and most significant, is the major impact cooperative education has on the financial rewards from Business & Management. This is reflected in the male 4-year comparisons where Business & Management dominates Engineering & Architecture under co-op, but the opposite holds for non-co-op. It can be concluded, therefore, either that co-op educational programs and techniques are more readily adaptable to Business & Management curricula than those for Engineering & Architecture, or that Business & Management co-op education is more effective in increasing the earnings capacity (productivity) of the program graduate.

In summary, an analysis of the rate of return answers a number of questions. It is clear that additional returns are to be gained by participating in a cooperative education program while attending college. This result is the clearest with respect to the 4-year co-op program, although the returns to the 5-year co-op program were large enough relative to a non-co-op 4-year program to encourage participation in the co-op program, even though it may require an additional year of school.

C. Additional Graduate Analysis

Additional analysis of the graduate experience is necessary for three reasons. First, the superior returns to cooperative education may be due, at least in part, to increased graduate earnings and/or labor force participation. Second, graduate earning may be affected by variables which were not used in the rate of return analysis due to sample size constraints. Third, cooperative education is theorized to have an impact on the graduate experience which is not necessarily reflected in earnings differentials. This last impact must be assessed through analysis of graduate data which is more subjective in nature. Accordingly, Section C is divided into two parts. Part 1 will consider variations in graduate earnings which may have been the result of variables both considered and not considered in the rate of return analysis. Part 2 will present the analysis of the non-pecuniary experience of graduates and consider the impact of cooperative education upon variables which reflect differences in job satisfaction, frequency of unemployment, fulfillment of career plans, and career advancement.

1. Additional Analysis of Graduate Earnings

This subsection will deal with those factors which may have impacted on the graduate earnings as calculated. This includes both those variables which directly or indirectly were included in the rate of return analysis above, and those factors which were not included because of cohort size limitations. Each set of factors will be analyzed in turn.

The choice of a three-year period not only minimizes the frequency of non-observations, but also provides a balance between graduates of 1970 and graduates of 1973. Both graduating classes had at least three years of post-graduate experience[1/] at the time of the survey--1976. Therefore, the three-year earnings figures are for both graduating classes combined, unless otherwise indicated.

1/ Of course, those who attended graduate school and were not able to work full-time were eliminated from the sample for these calculations.

The rate of return analysis was limited to sex, length of program, discipline area, and co-op status. In addition, the calculations represented the net results of both the student and the lifetime earnings experience combined. It is worthwhile to try to attribute the rate of return findings to one or both of these experiences, because policy tools are much more readily available for the student experience than for the graduate experience. This subsection will examine graduate earnings with respect to the selected variables listed above, whereas Section II will address the student experience.

Exhibit 4.2 was prepared to show the mean graduate earnings for the first three years after graduation by the rate of return cohort identifiers for the same sample of graduates that was used in the rate of return analysis. *In terms of co-op/non-co-op comparisons, tests indicated that the mean earnings of co-op graduates were significantly higher (at a 95 percent confidence level) than those for non-co-op graduates when considering all graduates, male graduates, and those graduates of Engineering & Architecture programs. No significant differences were found between co-op and non-co-op graduates when considering only females, any of the three program lengths, or discipline areas other than Engineering & Architecture.*

EXHIBIT 4.2: MEAN FIRST THREE-YEAR GRADUATE EARNINGS BY SEX, LENGTH OF PROGRAM, DISCIPLINE AREA, AND CO-OP STATUS 1/

GRADUATE CHARACTERISTICS		CO-OP		NON-CO-OP	
		Number	Mean	Number	Mean
TOTAL		442	$23,811	965	$16,942
Sex:	Male	363	26,320	579	20,088
	Female	79	12,285	386	12,223
Program Length:	2-Year	95	11,869		11,179
	4-Year	158	25,252		20,329
	5-Year	189	28,609		
Discipline Area:					
Engineering & Architecture		238	28,751	132	23,652
Business & Management		151	19,676	331	16,852
Health Professions		8	10,683	91	15,886
Liberal Arts		41	13,436	374	14,764
Trade & Industrial		4	18,584	37	18,6[illegible]

1/ Mean first three-year earnings are in 1969 dollars.

Such findings are not surprising relative to those of the rate of return analysis because: (1) the student experience has not yet been considered, and (2) in most instances earnings differences are observed which would explain (or be consistent with) the rate of return calculation, even though such differences may not be significant

statistically.[1/] Certainly, these figures are not inconsistent with the rate of return findings demonstration as they do the superior earnings by-in-large attributable to co-op participation.

Examination of the mean three-year earnings figures of Exhibit 4.2 within each co-op status also reveals other interesting relationships. In both co-op and non-co-op, male earnings are significantly greater than the corresponding female earnings. At the same time, both co-op and non-co-op earnings are significantly higher for 4-year than 2-year programs. While co-op 5-year earnings are significantly higher than those for 2-year programs and are absolutely higher than those for 4-year programs, they are not significantly higher than those for 4-year programs.

Finally, all of the discipline areas for co-op earnings except Trade & Industrial are either significantly higher or lower than the mean earnings for all co-op graduates, whereas, in the case of non-co-op graduates, only the earnings of Engineering & Architecture are significantly different from the non-co-op overall mean. In these discipline area comparisons, it is interesting that participation in co-op tends to create larger earnings differentials among the discipline areas in addition to increasing the overall mean. This is probably due to the fact that co-op education is better suited in terms of initial earnings to some discipline areas than others (e.g., Engineering & Architecture vs. Liberal Arts). This is consistent with the rate of return findings, as are the male/female and length of program earings differentials. Certainly, to a substantial degree, the earnings figures account for the observed rate of return differences. The extent to which the student experience also contributes to these findings must await the analysis of Section II, below.

[1/] Note that differences in the rates of return were never identified as statistically significant or not, because a test does not exist for such a determination. Tests are available, however, to measure the significance of earnings differences.

2. Analysis of Other Graduate Experience

Co-op participation is hypothesized to have an effect on the non-pecuniary experience of the college graduate. Accordingly, analyses were conducted to identify the effects of the cooperative education experience on job satisfaction, occurrence of unemployment, fulfillment of career plans, and rate of career advancement from the point of view of the recent graduate.

a. Level of Job Satisfaction

Each graduate was questioned regarding the level of satisfaction associated with the current job (i.e., the job held at the time of the survey). Responses ranged from highly satisfied to dissatisfied. We found that, while at least 83.2 percent of all respondents are satisfied with their current job, there are no significant differences in the percentage response rates as co-op status varied.

A series of job related questions were asked of graduates in order to indirectly measure the levels of job satisfaction and responsibility. Exhibit 4.3 presents the responses of both co-op and non-co-op graduates to each of the 11 questions. In four of the eleven questions the distribution of responses was significantly different between co-op and non-co-op graduates. *In three of the four, the measure indicates that the co-op graduate receives more job responsibility in terms of job difficulty, number of job assignments, and solicitation of opinion by the boss. In only one instance was the response pattern significantly indicative of less responsibility for the co-op graduate, and this was in response to whether a replacement had to be found in the employee's absence. A replacement had to be found "always" more frequently for the non-co-op graduate. All four significant findings relate to job responsibility rather than job satisfaction, and generally support the earlier findings that co-op graduates receive higher pay relative to non-co-op graduates.*

EXHIBIT 4.3: PERCENT RESPONSES TO INDIRECT MEASURES OF JOB SATISFACTION AND RESPONSIBILITY BY CO-OP STATUS OF GRADUATES.

JOB-RELATED QUESTIONS 1/	CO-OP			NON-CO-OP		
	Always	Sometimes	Never	Always	Sometimes	Never
Do you decide how things are done?	28.0	69.1	2.9	24.8	69.7	5.5
Are you doing a more difficult job now than when hired?*	61.7	32.1	6.2	45.8	42.0	12.1
Does your boss often ask your opinion about work?*	39.6	54.6	5.7	28.8	59.5	11.7
Can you do your job without thinking?	3.2	30.3	66.6	5.1	31.0	64.0
Do you learn something new each day?	43.3	52.5	4.2	39.8	53.9	6.2
Are you interested enough in your job to learn things after work?	26.7	60.7	12.7	24.5	59.1	16.4
Does your boss tell you when you do a good job?	22.9	65.8	11.2	21.2	65.7	13.1
Do you do things off the job with the people you work with?	11.0	74.0	15.0	11.1	73.3	15.7
Do you get paid less than other workers who do the same job?	8.2	45.0	46.8	10.8	38.1	51.2
Do they have to find a replacement for you when you are absent?*	22.4	41.0	36.4	31.7	33.9	34.4
Have you had many different assignments on this job?*	53.6	40.5	5.9	41.6	48.3	10.1

1/ "*" denotes significant co-op versus non-co-op differences for the response patterns at the 95 percent confidence level according to Chi Square tests.

b. Frequency and Duration of Unemployment

It is theorized that co-op graduates, because of their stronger contacts with the labor market and their increased preparation for employment, experience periods of unemployment which are fewer and of shorter duration than graduates from non-co-op programs. From the investigation of participation rates above it was concluded that labor force participation, on the average throughout the three year graduate earnings period under investigation, was not significantly different between co-op and non co-op samples. Another test of this hypothesis is whether co-op graduates devote less time to finding their first job after graduation. With this in mind the mean length of time in months required in searching for the graudate's first job was stratified by selected variables including co-op participation and previous experience. The results of this breakdown are presented in Exhibit 4.4.

In almost every instance in Exhibit 4.4, individuals in the Previous Experience Sample[1/] spent less time looking for their first job (as expected), although significance at the 95 percent level of confidence was indicated only in the cases of non-co-op total, males, Whites, 4-year programs, Health Professions, Liberal Arts, and in the case of co-op 2-year programs. In every co-op/non-co-op comparison on Exhibit 4.4, the co-op graduate was able, on average, to find the initial job faster than the non-co-op graduate counterpart even though such differences were significant only in the Earnings Sample (i.e., with no previous experience). Significance at the 95 percent confidence level was obtained in this sample for all co-op/non-co-op comparisons except non-White, female, 2-year programs, Health Professions, Liberal Arts, and Trade & Industrial.

Other significant findings on Exhibit 4.4 include differences between the sexes and the races for co-op participants with no

1/ The Previous Experience Sample consisted of those graduates who had significant work experience before attending college. In many of the analyses, their experiences and responses were treated separately from the mail sample.

EXHIBIT 4.4: MEAN TIME IN MONTHS REQUIRED TO FIND FIRST JOB BY GRADUATE AND SAMPLE CHARACTERISTICS AND CO-OP PARTICIPATION

GRADUATE CHARACTERISTICS		EARNINGS SAMPLE				PREVIOUS EXPERIENCE SAMPLE			
		CO-OP		NON-CO-OP		CO-OP		NON-CO-OP	
		Number	Mean	Number	Mean	Number	Mean	Number	Mean
Total		610	.81	1252	1.65	77	.65	340	1.04
Sex:	Male	500	.72	787	1.63	62	.76	271	1.09
	Female	110	1.22	465	1.70	15	.70	69	.88
Race:	White	569	.74	1157	1.65	64	.50	314	1.03
	Non-White	36	1.83	85	1.77	12	1.25	24	1.29
GPA:	Above Mean	402	.72	692	1.50	54	.59	227	1.21
	Below Mean	208	.98	560	1.84	23	.78	113	.72
Program Length:	2-Years	123	.74	450	1.29	37	.30	188	1.01
	4-Years	287	1.05	801	1.86	36	1.08	152	1.09
	5-Years	200	.51	0	--	4	0	0	--
Discipline Area:									
Engineering & Architectural		358	.67	210	1.14	18	1.22	61	.93
Business & Management		174	.75	400	1.75	40	.63	146	1.56
Health Professions		10	1.30	101	1.64	5	0	38	.37
Liberal Arts		48	1.79	451	1.94	10	.20	63	.59
Trade & Industrial		7	.71	46	.89	2	.50	18	.89

previous experience (males and Whites took less time), between high and low Grade Point Averages and 2- and 4-year programs for non-co-op graduates with no previous experience (above mean GPA and 2-year program graduates took less time). In addition, several significant differences were observed among the discipline areas. Co-op graduates with no previous experience took significantly less time to find the first job if their discipline area was Engineering & Architecture than if it was Liberal Arts. Non-co-op graduates with no previous experience took significantly less time to find the first job if their discipline area was Engineering & Architecture or Trade & Industrial

than if it was Liberal Arts. Those non-co-op graduates with previous experience, however, faced a different set of expectations. The time necessary for Liberal Arts was less than that for Business & Management and the time necessary for Health Professions was less than for either Engineering & Architecture or Business & Management. The finding for Liberal Arts graduates with no previous experience was not surprising, but the pattern displayed relative to Liberal Arts and Health Professions for those with previous experience was rather surprising.

Closely related to the ability to find a job quickly is success in finding the job best suited for the particular individual. This ability will reflect itself in the number of periods of unemployment over a set period of time. Presumably, the better suited the individual for his job, the less likely is the case that he will experience periods of unemployment. It was found that those graduates with previous experience consistently have a lower probability of experiencing one or more periods of unemployment that are six weeks in duration or more.

Looking at co-op/non-co-op comparison, co-op graduates display a lower probability of encountering such a period of unemployment. In the case of males, females, and White graduates regardless of graduation date, with no previous experience, such differences between co-op and non-co-op are significant at the 95 percent level of confidence. As expected, males always have significantly lower probabilities of incurring such periods of unemployment (which is consistent with normal male-female participation rate differences, which may be related to the incidence of childbirth), and co-op Whites with no previous experience have a significantly lower probability (less than half) of being unemployed than their non-White counterparts.

The number of months necessary for finding the first job, and the occurrence of periods of unemployment, might well be functions of the source of the first job. Tabulations were made to determine how often co-op and non-co-op graduates used various sources to find

their first job. These results are presented in Exhibit 4.5. In terms of statistical significance, the distributions of source usages in the co-op columns are always significantly different (at a 95% level of confidence) from the corresponding distribution in the non-co-op column. At the same time, both the co-op and non-co-op column distributions are significantly different between previous experience and no previous experience. *More than 35 percent of the co-op graduates (30% of the no previous experience graduates) obtained their jobs as a direct result of working in a co-op job--either from the employer or a similar contact). In addition, a substantially greater proportion of co-op students were able to obtain jobs as a result of school placement activities. The evidence is strong to support the contention that co-op participation assists the graduate in obtaining the first co-op related job through co-op employer contact and "in-school" efforts. On the other hand non-co-op graduates required greater reliance upon outside contacts (e.g., agencies, ads, friends, and family).*

EXHIBIT 4.5: PERCENT USING EACH SOURCE FOR FINDING FIRST JOB AFTER GRADUATION BY SAMPLE CHARACTERISTICS AND CO-OP STATUS 1/

JOB SOURCES	EARNINGS SAMPLE				PREVIOUS EXPERIENCE SAMPLE			
	CO-OP		NON-CO-OP		CO-OP		NON-CO-OP	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
SCHOOL OR FACULTY PLACEMENT	177	29.5	235	19.5	20	27.0	62	19.1
NON-SCHOOL SOURCE	140	23.3	782	65.0	19	25.7	190	58.6
CO-OP JOB OR CONTACT	218	36.3	0	0	22	30.0	0	0
NON-CO-OP JOB OR CONTACT	9	1.5	74	6.2	7	9.5	44	13.6
OTHER	57	9.5	112	9.3	6	8.1	28	8.6

1/ Percentages are for columns

c. Fulfillment of Career Plans

It is hypothesized that co-op participation leads to jobs which are more closely related to the college skills acquired and the career plans of the graduate. To test this relationship, three tabulations were performed to measure response patterns comparing graduates' college experience with the first job and the current job; and comparing the current job with career plans.

First, each graduate was asked how well the first job related to the college major. From the results in Exhibit 4.6, co-op graduates were placed in jobs which were significantly better related to their college programs than were non-co-op graduates. This result confirms those presented in Exhibit 4.5 where it was shown that co-op and school-related contacts were a significant impetus to a co-op graduate's employment, and is consistent with many of the other previous findings.

Second, graduates were asked how well their college-acquired skills related to their current job. From Exhibit 4.7, it can be seen that there were significant co-op/non-co-op differences (at the 95% confidence level), regardless of the existence of previous experience. Co-op graduates consistently exhibit more directly related college skills relative to the current job than non-co-op graduates. Also, graduates with experience possess skills which were significantly more related to their jobs than was the case for graduates with no experience, regardless of co-op participation. This finding is due to the fact that graduates with previous job experience are very likely to enter college programs which are strongly related to their pre-chosen career.

Lastly, the graduate was asked how the current job relates to the graduate's long-term career plans. These results, which are specific for previous experience and co-op participation are presented in Exhibit 4.8. More non-co-op graduates with previous experience obtained jobs which more closely related to career plans than was the case for non-co-op graduates with no previous experience.

EXHIBIT 4.6: PERCENT INDICATING EACH RELATIONSHIP OF FIRST JOB TO COLLEGE MAJOR BY SAMPLE CHARACTERISTICS AND CO-OP STATUS 1/

CHARACTERISTICS		DIRECTLY RELATED		SOMEWHAT RELATED		NOT RELATED	
		Number	Percent	Number	Percent	Number	Percent
Earnings Sample	Co-op	339	56.5	191	32.0	69	11.5
	Non-Co-op	540	44.6	337	27.8	335	27.6
Previous Experience Sample	Co-op	54	71.1	18	23.7	4	5.3
	Non-Co-op	165	50.6	102	31.3	59	18.1

1/ Percentages are for rows.

EXHIBIT 4.7: PERCENT INDICATING EACH RELATIONSHIP OF COLLEGE SKILLS TO CURRENT JOB BY SAMPLE CHARACTERISTICS AND CO-OP STATUS 1/

CHARACTERISTICS		DIRECTLY RELATED		SOMEWHAT RELATED		NOT RELATED	
		Number	Percent	Number	Percent	Number	Percent
Earnings Sample	Co-op	228	39.7	282	49.0	65	11.3
	Non-Co-op	401	36.2	470	42.4	237	21.4
Previous Experience Sample	Co-op	43	58.9	25	34.2	5	6.8
	Non-Co-op	147	46.4	115	36.3	55	17.4

1/ Percentages are for rows; current job means job held at the time of the survey--1976.

EXHIBIT 4.8: PERCENT INDICATING EACH RELATIONSHIP OF CURRENT JOB TO CAREER PLANS BY SAMPLE CHARACTERISTICS AND CO-OP STATUS 1/

CHARACTERISTICS		DIRECTLY RELATED		SOMEWHAT RELATED		NOT RELATED	
		Number	Percent	Number	Percent	Number	Percent
Earnings Sample	Co-op	351	61.0	180	31.3	44	7.7
	Non-Co-op	599	54.0	362	32.6	148	13.3
Previous Experience Sample	Co-op	55	75.3	14	19.2	4	5.5
	Non-Co-op	200	63.1	83	26.2	34	10.7

1/ Percentages are for rows; current job means job held at the time

It was also found that co-op participation resulted in more career related jobs. The existence of previous work experience seems to dissipate the importance of co-op participation. These findings are not surprising. Greater relevant work experience either before or during school would lead the graduate to a job more closely related to the desired career. In particular, those with work experience who return to school (e.g., the veteran) have better ideas of what they want out of school and may, in addition, enter programs which are more vocationally oriented.

d. Career Advancement

This last analytical part of Section I is an attempt to determine the rate at which advancement is made upon graduation from college. Such advancement is measured by the ratio of the last recorded salary to the first recorded salary normalized for the elapsed time between the two and expressed as a three year period of growth. Most of the differences which occurred were between previous experience and no previous experience. These significant differences by experience level always indicate more rapid salary advancements for those with past experience. Thus, it would seem as if previous experience leads

to significantly greater salary increases. It is surprising that in only one instance was there a significant co-op/non-co-op difference; graduates with previous experience in 4-year programs exhibited a higher growth in earnings if they participated in co-op.

D. Summary of Rate of Return and Graduate Analysis

To this point in Chapter 4, the results of the rate of return analysis and the graduate analysis point to several clear conclusions. It is clear that almost all of the college education investment options considered are financially rewarding, and, further, that these returns can be enhanced by participating in a cooperative education program. This is most vividly demonstrated by the fact that the returns to a 5-year co-op program are higher than the returns to a corresponding 4-year non-co-op program. This means that co-op participation is to be encouraged even though it may lead to a lengthening of the time spent in completing the program, because the returns generated thereby will more than compensate for the added cost of additional training (and foregone earnings).

The graduate analysis was conducted, in part, to ascertain the extent to which the patterns displayed by the rate-of-return analysis are determined by, or are consistent with, the earnings of program graduates as opposed to differentials in training costs. In other words, are the gains to co-op participation due to enhanced graduate earnings or lowered costs of education?

In general, the graduate experience supports the findings from the rate of return analysis. Stratification of graduate earnings by the rate of return cohort identifiers produces earnings patterns which are consistent with the findings of the rate of return analysis. Thus, it can be said that much of the return to co-op participation is attributable to higher graduate earnings. The extent to which the student experience is also a contributor must await the analysis of the next section (Section II). First, however, some other interesting findings resulted from the Graduate Analysis.

The first of these relates to graduates with previous experience. These individuals consistently exhibited significantly different earnings levels, and it often appeared that previous experience and co-op participation were substitutable attributes. That is, it was most often the case that a particular earnings level could be obtained either by having previous experience or by participating in a co-op program. Of further interest is the fact that the effects of the two attributes are not additive. Co-op participation is not profitable for an individual with previous experience.

Graduate experiences relative to job satisfaction, job responsibility, work continuity, and career plans were examined next. No job satisfaction differences were statistically significant, nor were differences in job satisfaction observed among other sample stratifications (e.g., sex, race, GPA, program length, discipline area). Some differences in levels of job responsibility were identified, however, by co-op status. These difference indicated that co-op participation leads to somewhat greater job responsibility upon graduation, which is consistent with the earlier finding that co-op participation is treated, in many respects, as similar to previous experience by the employer in terms of earnings.

Both co-op participation and previous experience displayed some tendency to reduce the period necessary to find the first job and to lower the probability of encountering periods of unemployment of six weeks or more. Part of the explanation for these findings relative to co-op participation is in the difference in sources that graduates use to find their first jobs. Those with no co-op experience lean heavily on outside contacts (e.g., agencies, ads, friends), whereas co-op graduates lean heavily on contacts with co-op employers and "in-school" efforts (e.g., school placement).

The examination of the co-op experience relative to career plans indicates that co-op participation provides first jobs which are more relevant to the college experience, and co-op participation continues to lead to a better match of college experience and job requirements

after a few years. It is also clear from the limited analysis of this section that cooperative education may be a successful device to further career education goals. After a few years, co-op graduates view their current jobs as significantly more related to their career plans than non-co-op graduates.

Caution must be exercised with regard to these conclusions, however, in the case of 2-year Liberal Arts and Health Professions programs in which females are generally enrolled. The findings with respect to these strata indicate that co-op education does not fulfill career plans anymore than do non-co-op education, and, in fact indicate a tendency for the opposite to be taking place. Certainly, this question bears further examination.

Finally, the rate of career advancement, as measured by recorded salary increases, was considered. Many statistically significant differences were found by different levels of stratification, but three distinct patterns are evident. The first is that previous experience pays off in terms of larger salary increases. The second is that, within levels of previous experience, the tendency is generally to have salaries grow so as to narrow starting salary differentials. The third is that no systematic pattern of greater salary growth by co-op participants than by non-co-op participants is apparent, so that those initial salary differentials tend to be maintained (or, at least, don't show a significant tendency to either converge or diverge).

II. ANALYSIS OF STUDENT COSTS AND BENEFITS

The purpose of this section is to consider in detail the costs and benefits incurred by the postsecondary education student with particular attention to differences attributable to the student's co-op status. Many of these costs and benefits were already included as elements in the rate of return analysis of Section I, but Section II will explicitly describe the differences in these costs and benefits as varying student and school-specific characteristics are considered. Section II will deal with the student experience in much the same manner as the Additional Graduate Analysis of Section I dealt with the graduate experience. For example, it has already been determined in Section I that differences in graduate earnings and employment experiences explain a large part of the differences found in the rates of return to college education. Section II will determine whether student costs and benefits are also determining factors in these rate of return differences. Specifically, some of the questions to be answered are:

- What are the individual cost and benefit items for co-op and non-co-op students and how do these items vary with respect to other student and school-specific variables?
- How do co-op earnings compare with other sources of student income?

Differentials in costs and benefits as other area and school specific variables change will then be calculated and analyzed. Some of the questions pertaining to these additional variables are:

- Do race or veteran status affect costs and benefits? Additionally, are these variables highly correlated with other factors which affect student cost and benefits, such as program length or discipline area?
- Does school ownership (public versus private) affect student costs and benefits? Are there any other school-specific variables which affect student costs and benefits?

Lastly, the attitude of students toward their college education and employment as students will be examined in order to measure some of the non-pecuniary costs and benefits associated with alternative student and institutional characteristics. That is, the question will be asked:

- How do co-op status and other student and institutional characteristics affect the students' attitudes toward their education and college jobs?

A. Analysis of Rate of Return Variables

It has been determined above that the pattern established by the rate of return analyses is consistent with the findings with respect to graduate earnings and labor force participation and are in part explained by them. This effort is to make the same type of comparison with respect to the student experience. Several student cost and benefit elements were defined for inclusion in the cohort-specific net benefit streams. Those elements to be examined in this analysis are:[1/]

- student costs (books, tools, supplies);
- tuition;
- student taxable earnings; and
- student non-taxable income.

The means for each of these variables were calculated according to each of the cohort-determining attributes and are presented in Exhibit 4.9. In addition, a net income figure for students was calculated by subtracting student costs and tuition from the student incomes, and the resulting mean also presented in Exhibit 4.9. Several results are apparent which are consistent with the rate of return findings:

- Male students have significantly higher net incomes than female students due largely to taxable earnings differences.

1/ These elements specifically exclude food, housing, and transportation costs.

EXHIBIT 4.9: ANNUAL MEAN STUDENT COSTS AND BENEFITS BY COOPERATIVE STATUS AND RATE OF RETURN VARIABLES 1/

	STUDENT CHARACTERISTICS		TUITION		COSTS 2/		TAXABLE EARNINGS		NON-TAXABLE INCOME		STUDENT NET INCOME	
			Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean
TOTAL	Sex:	Male	863	999	863	365	872	2281	871	732	865	1681
		Female	610	796	610	344	617	1210	616	705	609	799
	Program Length:	2-Year	627	367	627	291	635	1416	634	450	626	1232
		4-Year	674	1360	674	371	682	1728	681	965	673	985
		5-Year	175	1128	175	507	175	3748	175	779	175	2893
	Discipline Area:											
	Engineering & Architecture		340	1111	340	456	341	2980	341	796	342	2198
	Business & Management		482	829	482	305	488	1775	487	616	482	1270
	Health Professions		150	787	150	288	150	754	150	767	150	457
	Liberal Arts		307	1058	307	353	312	1254	311	892	306	778
	Trade & Industrial		123	532	123	340	125	1600	125	523	123	1335
CO-OP	Total Co-op:		651	844	657	400	657	2669	657	620	651	2076
	Sex:	Male	414	964	414	400	415	3187	415	629	414	2462
		Female	237	634	237	401	242	1781	242	603	237	1402
	Program Length:	2-Year	256	352	256	318	260	1835	260	368	256	1568
		4-Year	220	1191	220	408	222	2796	222	788	220	2017
		5-Year	175	1128	175	507	175	3748	175	779	175	2893
	Discipline Area:											
	Engineering & Architecture		246	1078	246	467	247	3499	247	726	246	2697
	Business & Management		207	823	207	302	208	2327	208	550	206	1783
	Health Professions		27	479	27	255	28	1065	28	703	28	1022
	Liberal Arts		105	603	105	440	106	1766	106	566	105	1310
	Trade & Industrial		34	512	34	357	35	2395	35	635	34	2251
NON-CO-OP	Total Non-Co-op:		825	964	825	317	835	1173	833	806	823	716
	Sex:	Male	449	1013	449	333	460	1447	459	830	451	964
		Female	373	899	373	309	375	837	374	776	372	415
	Program Length:	2-Year	371	378	371	272	375	1125	374	506	370	1000
		4-Year	454	1443	454	353	460	1212	459	1050	453	484
	Discipline Area:											
	Engineering & Architecture		94	1195	94	426	96	1571	96	986	96	921
	Business & Management		275	834	275	308	281	1349	280	661	276	888
	Health Professions		123	854	123	295	122	679	122	781	122	328
	Liberal Arts		202	1295	202	307	206	1000	205	1072	201	500
	Trade & Industrial		89	540	89	334	90	1295	90	528	89	985

1/ Annual mean costs and benefits are in 1976 dollars.

2/ Includes books, tools, supplies, etc. but specifically excludes transportation, food, and housing.

- 5 year programs provide significantly higher annual student net incomes than 4-year programs, and both provide significantly higher student net incomes per year than 2-year programs.
- Engineering & Architecture provides the largest annual student net incomes, while Liberal Arts and Health Professions provide the lowest annual net incomes. These differences were due largely to variations in both taxable student earnings and tuitions.
- There were significant co-op/non-co-op differences found for all student cost and income components prior to stratification, but these differences were not always maintained when stratified by cohort identifiers. Females, 4-year students, Health Professions, and Liberal Arts cohorts had significantly lower tuition payments for co-op. Males and Liberal Arts cohorts had significantly higher student costs than corresponding non-co-op students. Males, 2-year, 4-year, and Liberal Arts cohorts exhibited significantly lower non-taxable incomes for co-op students than for non-co-op students. The most significant result in Exhibit 4.9, however, is that taxable earnings were significantly higher (at a 95 percent level of confidence) for every co-op category than for the corresponding non-co-op category. As a result, co-op net income figures were significantly higher than those for non-co-op.

It is clear that these findings support the earlier rate of return findings so that both the student and the graduate experiences are consistent with the rate of return calculations. *In addition, the student co-op/non-co-op comparisons indicate quite clearly that the co-op program is an effective student aid device. While some variance was found in student costs, tuition, and non-taxable student incomes, the favorable differentials in student net income between co-op and non-co-op are directly attributable to differences in taxable student earnings; i.e., co-op student earnings. Thus, regardless of sex, program length, or discipline area, co-op programs provide an important financial aid device for the participant.*

B. Student Benefits

Another set of analyses calculated student earnings not related to co-op employment. In about every instance, these total earnings were significantly larger for non-co-op than for co-op students.

Turning to non-taxable revenues, we calculated the total of all student transfer payments. Included are grants, subsidies, and loans Non-co-op students were shown to make up part of the taxable earnings differential caused by co-op earnings by experiencing somewhat greater transfer payments. At the same time, however, those students (both co-op and non-co-op) with previous experience again had lower (in most cases, significantly lower) transfer payments. This served to widen the revenue differential associated with previous experience. The final possibility of closing this differential lies with the examination of G.I. benefits.

Since over half of the Previous Experience Sample are veterans, this and earlier findings for veterans, as well as the findings for those students in the Previous Experience Sample, may be clarified by an examination of G.I. benefits. These benefits for the Previous Experience Sample were calculated and were identified as the final revenue source needed to bring about parity in total revenues among the samples. In fact, the size of these annual benefits more than makes up the difference indicated by earnings and transfers and, in large part, covers the greater non-tuition expenses incurred by students with previous experience.

This was most likely the case for co-op students with previous experience because their G.I. Benefits on the average were higher than those for non-co-op students. This was mainly due to a larger proportion of veterans in the co-op group. Finally, of particular note were the consistently significantly higher G.I. benefits for Whites than for non-Whites, which may be a reflection of proportionally more White veterans.

In order to summarize the pecuniary cost and benefit items considered above, we then combined all of these income sources. All

co-op students experienced pecuniary benefits of earned and unearned income larger than the costs of tuition and other costs. This was not the case for non-co-op students, however. Clearly, the non-co-op student faces a net negative out-of-pocket cash flow prior to consideration of parental support. This is the case for all characteristics except for veterans without previous experience. This further supports the conclusion that cooperative education is an effective financial aid device for students of all types.

For both co-op and non-co-op students, those with previous experience have the worse financial positions, probably because of their increased family responsibilities. Even the presence of G.I. benefits was unable to bring those non-co-op students with previous experience on a par with other non-co-op students. In fact, it required the presence of both G.I. benefits and co-op earnings to provide an average positive cash flow for the co-op students with previous experience, and even then the difference from zero is marginal and substantially below those for co-op students without previous experience. Thus, in spite of earlier findings regarding the high graduate earnings of students with previous experience, the net returns to college investment by these students are certain to be below those of co-op students without previous experience (and without the added financial responsibilities and liabilities), and may not be much higher than those for non-co-op students without previous experiences.

C. Student Attitudes and Job Performance

Students of all types were asked a series of questions regarding their attitudes toward their educational experience. The analytical objective was to determine whether or not significant attitudinal differences exist among students by co-op status and other selected variables.

1. Overall Satisfaction

It could be hypothesized that students in a cooperative education program would tend to be more satisfied than non-co-op students because of the on-the-job training aspects of cooperative

education and other factors to be explained below. Accordingly, all students were asked their levels of satisfaction with the education being received. Both co-op and non-co-op students indicated satisfaction with their current educational program by a nine to one ratio. Further, however, a Chi-Square test indicates an association between satisfaction and co-op status at a 95 percent level of confidence. (I.e., more co-op students are satisfied more often than non-co-op students.) Co-op students are apparently satisfied more often than non-co-op students, although this relationship is not very strong.

These same cross-tabulations were run by controlling for the sample, sex, discipline area, length of program, region, unemployment level, ownership, race, and parental income. In every case, the student was satisfied with the education program by a nine to one majority. Thus, it is clear that students are highly satisfied with their education, and some weak (positive) association exists between satisfaction and the co-op status within most strata.

2. Relation of Student Work to Major

Students were next asked if their work experiences while in school were related to their discipline areas. We found a definite association between the "yes" and "no" responses and co-op participation (significant at the 95% level of confidence). Three-quarters of the co-op students responded that their job experiences were related to their majors, whereas only 41 percent of the non-co-op students so responded.

Tabulating the responses separately by sample, sex, discipline area, length of program, region, unemployment level, ownership, race, and parental income produced little variation in the results. All exhibited the same significant findings.

3. Advantages to Student Jobs

A series of five different advantages are often cited or claimed for holding a job while in college. Students were asked to rate each of these advantages by responding "very important," "some-

what important," or "not important" to each. The first of these advantages is that a student job provides an opportunity to try to match a variety of jobs to the student's preference.

There is a significant (at a 95% level of confidence) association between the importance responses and co-op participation. Over 80 percent of co-op students consider their jobs important in providing an opportunity to match their performances, whereas less than 75 percent of non-co-op students so indicate.

The second claimed advantage is that a student job provides an opportunity to apply training to actual work. We found a significant relationship between the level of importance of the job in this respect and the co-op status of the student. A total of 64.6 percent of co-op students consider the job very important, and only 8.1 percent of them consider it not important as opposed to percentages of 48.3 and 18.7, respectively for non-co-op students.

The third claimed advantage for holding a student job is that it generates earning power to pay college expenses. We found a significant association between importance of this factor and the co-op status of the student, but, at the same time, the relationship is statistically weak and may have achieved significance more because of the size of the "n" than because of the distribution of the responses.

The fourth advantage claimed for a student job is that it provides an opportunity to assume responsibility. About 92 percent of co-op students feel the job is important in providing an opportunity to assume responsibility whereas less than 87 percent of non-co-op students felt this way toward their student jobs. While there is a significant association between the response and co-op participation, the association is not paricularly strong.

The last claimed advantage in this question sequence was that a student job increases the student's chance of acquiring a good job upon graduation. We found that students feel that student jobs are important in acquiring good jobs on graduation by a nine to one ratio. Co-op students, however, indicate a significantly stronger

feeling of importance for the job in this respect. Almost 75 percent of the co-op students feel the student job is very important, whereas only 60 percent of the non-co-op students feel this way.

In summary, all five of the advantages alleged for co-op participation appear to be significantly more frequently considered as important by co-op students than by non-co-op students, although the advantage claimed in the case of providing earnings to pay for college expenses was very weak. These relationships continued to hold when the responses were stratified by a number of school and student characteristics, even though some fairly consistent deviations were observed. For example, both the stratum of co-op students attending private schools and the stratum of non-White co-op students considered most of the advantages more important than their non-co-op counterparts by a far greater margin that did the co-op students in other strata--particularly the matching of jobs with skills and the improvement of chances of obtaining a good job upon graduation. At the same time, however, those co-op students with previous experience --in Health Professions and in Trade & Industrial--indicated that they considered these advantages no more important than did their non-co-op counterparts. It is interesting to note that in no case was any of these "advantages" considered more important by non-co-op students than by co-op students.

These opinions regarding perceived advantages of the co-op programs by co-op students are also consistent with the levels of overall satisfaction experienced earlier by the students, as well as the perceived relationships of the student work to the major. In most cases, the co-op students indicated a higher level of satisfaction with their programs than the non-co-op students, and co-op students indicated that the student work was closely related to the major much more often than non-co-op students, regardless of student or school type.

4. Current Job Descriptions

In order to gain some insight into the students satisfaction with (and performance on) the job, a series of 10 separate questions were asked with a range of response for "always" to "never" permitted. Exhibit 4.10 presents these responses for all students by co-op status. In eight of the ten questions, the response patterns were significantly different for co-op students than for non-co-op students. The only non-significant findings were for questions concerning whether the student decided how things should get done and whether their boss often asks their opinion about work.

The remaining responses indicate that significantly fewer co-op students can do their jobs without thinking, associate with fellow workers after hours, and require a replacement when absent. Apparently they are given jobs that require some thinking, but that are postponable--possibly a job not in the mainstream of the business. This would also explain the tendency to associate less with those doing the mainstream jobs. At the same time, students responded that significantly more co-op students learn something new each day, learn things after work, are told they do a good job, get paid less, and receive multiple assignments. These responses fit into the pattern of being assigned a number of special tasks rather than being assigned a mainstream job. This type of job would require more thinking, is more apt to induce praise, and is also likely to elicit less pay. Generally, these jobs probably provide better training than jobs in the mainstream.

It is interesting that all 10 of these questions were also asked of graduates (see Exhibit 4.3) where the only significant non-co-op differences were regarding being asked one's opinion, the necessity for a replacement when absent, and the number of job assignments. A comparison of the student and graduate findings indicates that the co-op participants continue to receive multiple job assignments, and require replacements when absent less often, after graudation. Other

EXHIBIT 4.10: PERCENTAGE RESPONSES OF STUDENTS TO INDIRECT MEASURES OF JOB SATISFACTION AND RESPONSIBILITY BY CO-OP STATUS 1/

JOB-RELATED QUESTIONS 2/	CO-OP			NON-CO-OP		
	Always	Sometimes	Never	Always	Sometimes	Never
Do you decide how things are done?	15.1	71.5	13.4	16.7	67.6	15.7
Does your boss often ask your opinion ?	18.3	63.9	17.8	19.3	59.9	20.9
Can you do your job without thinking?*	8.9	39.3	51.8	13.6	44.0	42.5
Do you learn something new each day?*	38.2	56.5	5.2	26.7	60.5	12.8
Are you interested enough in your job to learn things after work?*	27.3	56.9	15.8	20.0	49.6	30.4
Does your boss tell you when you do a good job?*	34.9	53.2	11.8	27.7	56.5	15.8
Do you do things off the job with the people you work with?*	12.2	59.9	27.9	15.3	60.8	23.9
Do you get paid less than other workers who do the same job?*	25.0	26.3	48.7	14.8	28.7	56.5
Do they have to find a replacement for you when you are absent?*	21.4	33.3	45.2	31.3	34.9	33.8
Have you had many different assignments on this job?*	41.4	49.3	9.3	32.2	50.4	17.4

1/ All figures in the exhibit are row percentages.

2/ "*" denotes significant co-op versus non-co-op differences for the response patterns at the 95 percent level of confidence using Chi Square tests.

than these, the co-op graduates are differentiable from non-co-op graduates in only one respect: after graduation, co-op graduates begin to be asked their opinions about the job more often than non-co-op graduates.

5. Student Ratings of Co-op Program Quality

Co-op students were asked to rate 10 separate aspects of the co-op programs on a scale of one to five, where one represents poor and five represents excellent. The mean scores or ratings of all 10 items are presented in Exhibit 4.11. The results of these tabulations are quite clear. *The co-op programs are rated above average on all items, but the highest ratings were received on the adequacy of the employer facilities, the quality of employer training, the quality of college instruction, and the overall quality of co-op program, whereas the lowest mean rating was found in counseling for career planning.*

6. Student Recommendations

As a follow-up to the quality ratings above, students were asked whether they would recommend the co-op programs to all, some, or none of the other undergraduates. *Almost two-thirds of the students responded that they would recommend the co-op program to all undergraduates and less than 3 percent indicated that they would not recommend the program. This is a very strong testimony for the co-op programs, and confirms the above quality ratings.*

D. Summary of the Student Experience

Examination of the student experience produced results which were entirely consistent with the findings in the rate of return analysis of Section I. Is is clear that not only does co-op lead to increased earnings of the program graduates, but that it serves as a student aid device in most instances.

Closer examination of the individual components of the student costs and benefits indicated that co-op students had a much more favorable relationship of pecuniary benefits to costs during the

EXHIBIT 4.11; CO-OP STUDENT RATINGS OF CO-OP PROGRAMS ON SELECTED ITEMS 1/

RATING ITEMS	NUMBER	MEAN SCORE
1. Quality of instruction or training from co-op employers	1149	3.843
2. Adequacy of employers' facilities	1142	3.925
3. Relevancy of classwork to work experience	1150	3.513
4. Recruitment of employers in Career-relevant areas	1131	3.457
5. On-going communication with employers	1143	3.672
6. Counseling in career planning	1148	3.199
7. Placement of students in work experience	1140	3.544
8. Placement of students upon graduation	1076	3.419
9. Quality of instruction at college	1156	3.819
10. Overall quality of co-op program	1154	3.918

1/ Ratings were on a 5-point scale with a score of (1) equalling "poor" and a score of (5) equalling "excellent."

school years than did non-co-op students. In fact, combining the costs and benefits considered, non-co-op students generally experienced an annual negative out-of-pocket cash flow. These findings indicated that, in spite of significantly higher graduate earnings, the net returns of a college investment for students with previous experience are certain to be below those of co-op students without previous experience, and may even be below those for non-co-op student without previous experience.

The examination of student attitudes and experiences also uncovered some important and interesting co-op/non-co-op differences. Five advantages have been alleged for co-op participation. These advantages range from providing opportunities to try a variety of jobs and a chance to assume responsibility to making money to pay for college expenses and increasing the chances of getting a good job upon graduation. In each case, the co-op student indicated that the consideration was more important than did the non-co-op student. The only strata for which this relationship did not hold was for those students with previous experience and students in the discipline areas of Trade and Industrial and Health Professions. On the other hand, the co-op/non-co-op difference was very strong for non-White students and students in private schools.

These student responses, in general, are consistent with the findings regarding the level of overall satisfaction with the school program and the matching of the student work to the major. Co-op students indicated higher levels of satisfaction with the school program than non-co-op students, but the co-op/non-co-op differential was not strong. (Both student groups were highly satisfied.) On the other hand, co-op students overwhelmingly indicated a strong relationship between the student job and the college major compared to non-co-op students. Thus, while the overall satisfaction with the college program was only marginally higher for co-op students, the relevance of the student job to the major was clearly better in the co-op programs.

When asked to describe the student job experience (both satisfaction and performance), the response patterns were significantly different between co-op and non-co-op students in eight out of the ten cases. Apparently both types of students get to decide how things should get done on the job and get asked their opinions about work with the same frequency. On the other hand, significantly fewer co-op students can do their jobs without thinking, associate with fellow workers after hours, or require a replacement when absent. This indicates that co-op students are not in the mainstream. That is, they are given jobs that are specialized, not routine, generally postponable, and require independent thinking. This conclusion is also consistent with the findings that co-op students more often learn something new each day, learn things after work, are told they have done a good job, receive multiple assignments, and get paid less.

Nine of these questions were also asked of program graduates as reported in Section I. A comparison of the graduate and student responses indicates that the co-op participant continues to receive multiple job assignments more often, and require replacements when absent less often after graduation. Other than these, the co-op graduates are differentiable from non-co-op graduates only in that co-op graduates begin to be asked their opinions about the job more often than non-co-op graduates.

The student ratings of the quality of their programs, according to 10 program characteristics, produces several interesting findings. The co-op programs are rated "above average" according to all 10 characteristics; but the adequacy of the employers' facilities, the quality of employer training, the quality of college instruction, and the overall program quality rating were rated the highest of the 10; whereas counseling for career planning received the lowest mean rating. Consideration of these rating items by various strata indicated that those with previous experience and those in new programs better appreciate the co-op structure of education. (Their ratings of the programs in terms of the quality of employer training and overall quality of the co-op programs were significantly higher than other students.)

Lastly, when co-op students were asked whether they would recommend the co-op program to other students, less than 3 percent indicated that they would not recommend the program to others, whereas almost two-thirds indicated that they would recommend co-op to all other students. This is an extremely strong testimony to the preference of students for cooperative education.

III. ANALYSIS OF INSTITUTIONAL COSTS AND BENEFITS

The purpose of this section is to examine the costs and benefits of postsecondary cooperative education as they impact upon the academic institution. There are four major issues to be addressed:

- What are the incremental costs specifically attributable to co-op programs?
- What are the incremental benefits of co-op programs to participating institutions?
- How do the incremental institutional costs and benefits attributable to co-op programs compare?
- How do selected qualitative cost components vary by program characteristics?

It should be noted that the goal of this section is not to measure total program costs and benefits, but rather to measure only those that are realized by the institution as a direct result of the cooperative education program. The central question then is, does the cooperative education program generate revenues sufficient to cover the costs added by the program from the point of view of the institution?

Additionally, it should be noted that obtaining adequate measures of all types of cost was not possible. For example, it would have been desirable to measure personnel costs, materials and supplies, capital costs, travel, telephone, etc. necessitated by the program over and above the normal expected educational costs in a non-co-op program. Unfortunately, only part of the personnel costs were able to be directly measured. The impact on the cost and benefit comparisons

of this analytical limitation will be discussed during the cost-benefit comparisons.

Ordinarily, one would presume that the above cost limitations would result in net incremental cost-benefit comparisons that were biased in favor of cooperative education programs. While the costs are certainly biased downward, such is also the case with the benefit measures. Accurate information on lump sum co-op funding and tuition received by the institution while the student is undertaking his/her work experience are readily available, but corresponding measures of other income such as average daily attendance (ADA) funding and population-dependent allocations of tax dollars were not available. This means that, in many instances, the added revenues associated with the conduct of a cooperative education program are also biased downward. Therefore, the direction of bias of the net cost-benefit figure is unknown; it depends on whether the downward bias is greater for the costs or the benefits. Fortunately, the magnitude of the cost bias can be approximated so that a net cost-benefit figure can be generated which presents an a fortiori argument for the implementation of a cooperative education program by the institution. The nature of this argument will be discussed in-depth at the end of this section.

Another analytical problem which requires preliminary discussion is the use of the term "program." Throughout this report, the question of whether program meant the combination of all cooperative education activities for a single institution or the activities associated with cooperative education in a single discipline area for an institution either has been clear from the context in which it was used or has been unimportant. In this section, the distinction is critical.

Optimally, the analysis should be conducted in terms of a single discipline area, but only the analysis of recorded initial set-up costs does so. For all other costs, the problem of joint costs and the untraceability of costs among discipline areas with the present data base precludes discipline area-specific analyses.

Except for the initial set-up costs then, the analyses are conducted in terms of institution-wide co-op activities, and the data representing a mix of discipline areas within a single institution is not separately known for each cost item. Therefore, when adding cost elements and benefit elements, bias cannot be determined with the present data base.

Finally, because of the unique sets of characteristics and situations among the schools in the sample, these data displayed very high degrees of variability. For this reason, truncated means were used to measure the typical cost and benefit components. That is, extreme values or outliers were eliminated from the analysis of selected cost and benefit components. Since the sample sizes are fairly small, such obvious outliers would have unduly influenced the calculation of means, and it was felt that comparisons of truncated means would be preferable to a comparison of medians which are not influenced by extreme values. The nature of the cost specific truncations will be indicated below for each cost and benefit component.

The remainder of Section III is divided into three subsections. Subsection A deals specifically with incremental institutional personnel costs which are the direct result of co-op program participation. These costs are divided into three categories: initial program set-up costs, annual fixed costs, and annual variable costs. Subsection B deals similarly with institutional benefits which are the result of co-op participation. Subsection C makes comparisons between the incremental costs identified in Subsection B.

A. Analysis of Institutional Cost

This subsection investigates the various component costs which impact upon the academic institution as a result of its participation in cooperative education. Most of these costs are based upon responses to questionnaire items by faculty, co-op directors, fiscal officers, and senior academic officials. Cost elements which will be examined include:

- Initial Set-up Costs;
- Annual Fixed Costs--Co-op Director's Salary; and

- Variable Costs:
  - -- Costs of Co-op Placement Services,
  - -- Costs of Co-op Counseling Services,
  - -- Faculty time involved in on-site activities and employer contact, and
  - -- Co-op personnel costs.

The manner in which these average component costs vary with different program or institutional characteristics will also be examined. The characteristics used in this analysis are as follows: presence or absence of IV-D funding, 4-year versus 2-year, public versus private ownership, co-op program age, high versus low State unemployment rate (above and below median unemployment rate for the nation), and co-op program enrollment (categorized into tertials).

1. Initial Set-up Costs

The cost of establishing a co-op program (i.e., in this case, for a particular discipline area) is an important element of the total cost of operating a program of cooperative education. The co-op directors were asked to estimate the number of staff person-weeks devoted to various set-up activities by several categories of personnel for the most recently initiated co-op discipline area. These estimated levels of effort were multiplied by the corresponding median 1975-76 salary figures (as reported by the fiscal officers in our sample), in order to estimate the personnel cost associated with these start-up activities. A mean total personnel cost of $8,613 was utilized in staff efforts for program design, materials development, evaluation design, faculty training, employer contacts, curriculum revision, and other start-up activities. Since it was not possible to measure the total non-personnel costs associated with the establishment of a new program, this figure represents a minimum cost level.

When looked at in relation to different institutional types, the most notable differences were between 2-year and 4-year and between programs in high and low unemployment States. Clearly, the 4-year and the high unemployment State programs have incurred

higher set-up costs than the 2-year and the low unemployment State programs. These results are due to two factors. First, 4-year schools spend, on average, over twice the length of time in start-up activities than do 2-year schools (i.e., 11 months versus only 5 months). Second, since programs in high unemployment States are likely to have greater difficulty in recruiting an initial pool of employers, it is not surprising that they devote more resources to these start-up activities. We also learned that IV-D schools have slightly higher start-up costs than do non-IV-D institutions.

In terms of the actual personnel efforts involved, the overall cost for set-up activities of $8,613 represents about 23 person-weeks of staff time, over half of which (i.e., 13 weeks) was the work of the co-op director. From another question asked of the co-op director, we have found that the mean length of time over which these start-up activities take place is about eight months. Thus, in the typical school, a co-op program for a new discipline area can be initiated with less than the full-time effort of one individual over the course of two semesters.

2. Annual Fixed Costs--Co-op Director's Salary

In most schools, what usually turns out to be the single most significant personnel cost in the operation of a co-op program (i.e., the combination of programs in the school) is the salary of the co-op director. While over the years, this cost is likely to vary significantly, it can be regarded as fixed in the short run and not subject to vary as the program enrollment changes marginally. The annual costs for this element of co-op program operation in the overall sample is $10,632. This represents one individual devoting more than half-time to co-op activities. In IV-D schools, there is typically the equivalent of a three-quarter-time person directing the co-op program, which results in a cost to institutions of this type of $13,600. Non-IV-D schools are much more likely to have no director at all. In those schools, the mean cost is therefore only $7,217. Private schools also have higher costs attributable to this factor than do public schools, as do schools in states with high unemployment.

Since this component represents a fixed cost for co-op program operation, there is little overall difference in total cost among programs of different enrollment sizes, although per student costs drop significantly (as expected of a fixed cost) as program size increases. The higher fixed cost in IV-D schools is not surprising. Since the usual grant of $25,000-$30,000 is sufficient to cover the cost of a co-op director, and perhaps some clerical support, this has become the typical use for the IV-D grant. However, an explanation for the higher amount spent in this regard by private schools is not immediately apparent. As will be seen, their costs are less for faculty time devoted to co-op activities. Thus, the private schools may have structured the programs such that most activities are centralized in the role of the co-op director. The higher costs for this component among schools located in States with high unemployment we would hypothesize to be due to a need for greater effort in employer recruitment which would often mandate a full-time director with a significant amount of time available for such activities.

3. Annual Variable Costs

Annual variable costs are those costs needed to operate a co-op program, which are expected to be a function of (i.e., vary directly with) co-op student enrollment. For schools with co-op programs, these variable costs may be divided into two general categories. First, there are the costs associated with the provision of ancillary services to the students enrolled in the co-op programs. The personnel component in this category of variable cost can be further subdivided into two specific areas of program services: placement and counseling. The second major personnel variable cost category is the faculty time spent in employer contact that is needed over and above the efforts of the co-op director in this regard. Each of these specific personnel variable cost components--placement, counseling, and faculty time--will be discussed individually and combined, and will be expressed in terms of <u>costs per student</u>. It should be kept in mind that all costs are incremental; that is, they are a direct result of the co-op program over and above the costs associated with non-co-op education.

a. Annual Placement Costs

The first category of personnel variable costs to be considered is that for placement specialists hired or used specifically for the co-op program. While in most schools with co-op programs the bulk of the placement activities are conducted by the co-op director or the school's regular placement office, some programs have additional placement specialists for students enrolled in the co-op program. The typical cost per student for this function is $67. Schools with IV-D funding have higher costs for this component than do the non-IV-D schools ($107 vs. $9). We would suspect that this difference is due to the availability of this additional funding for co-op which would enable the hiring of co-op placement specialists more frequently than in schools without such funds. New programs, and programs in 2-year schools (which tend to be newer), also have higher per student costs in this regard. It is interesting to note that no private schools in our sample provided this additional placement support for co-op students. However, as noted previously, the private schools devote more resources to the position of co-op director. We would therefore hypothesize that in these schools the co-op director is more able to provide all needed placement activities without the assistance of additional personnel.

b. Annual Counseling Costs

While all students receive some forms of counseling regardless of their co-op status, co-op programs often claim to provide additional counseling, especially in the area of career development. About 88 percent of the co-op directors said their programs provided co-op students with general career counseling, with work experience counseling, with academic counseling, and with personal counseling. What is important to this analysis, however, is whether there is any increased level of effort involved in the counseling of co-op students as compared to the counseling regularly provided to any student.

To address this issue, co-op directors were asked the number of hours per year of counseling of any type received both by co-op students and by non-co-op students alike. Any differential between these two reports would represent the co-op specific costs of this component of program operation. In the typical school, the mean level of effort in this regard was 11.3 hours per student each year for co-op students and 6.6 hours per year for non-co-op students. Thus, the costs for counseling attributable to the operation of a co-op program would be 4.7 hours of additional effort multiplied by the mean hourly salary earned by those personnel providing the counseling services. Since several different categories of personnel provided these services (i.e., co-op director, faculty, and counselors), and since the relative proportion provided by each is not known, the mean salary of a counselor, as reported by the fiscal officers, was used.

The per student cost attributable to counseling of co-op students over and above that expended on behalf of non-co-op students was $49. There were very few sizeable differences in these costs by institution type. The most notable difference was between public and private schools, with private expending more than half again as much per student for counseling than was the case in public institutions ($72 vs. $45). It should be noted that the difference in costs between these two categories of schools is a function of the additional hours of counseling received by co-op students in private schools, and not due to salary differentials.[1/] As would be expected in 1:1 counseling systems, co-op specific counseling costs tended to increase almost proportionately as the size of the co-op enrollment increases.

c. Annual Faculty Time Costs

While most faculty activities are no different for co-op or non-co-op students, time spent contacting employers and time spent in on-site visits to work locations to evaluate students'

1/ It should be noted that since counseling can be (and often is) undertaken by the co-op director, there may be some double counting of the co-op director's time in these figures, especially for private schools where the co-op director's time is much higher.

work experiences do constitute a personnel cost which is specifically attributable to the existence and operation of a co-op. Faculty members interviewed were asked to estimate the proportion of their time devoted to these activities. These data were used in conjunction with the faculty salaries reported by the fiscal officer to estimate this cost of co-op program operation. We found added faculty time represents an annual per student cost of $33 in the typical school. The opposite trend from that seen with co-op director costs is found for faculty cost in relation to institution ownership. Public institutions have somewhat higher costs for faculty time in these activities than do private schools ($36 vs. $23). This may indicate different strategies for carrying out employer contact and on-site evaluation activities in different types of schools, with private schools centralizing these functions in the co-op director's role, and public schools dispersing more of these types of activities among the faculty. On the other hand, it appears as if the faculty in new programs spend about twice as much effort per student on these type of activities as do those in ld programs ($50 vs. $24) in spite of a much greater level of effort on the part of the co-op directors in the newer programs. Finally, costs for this component of co-op program operations show a sharp decline on a per student basis as program enrollment increases beyond the smallest enrollment category. This indicates that such costs do not increase proportionally with program size.

d. Total Annual Variable Costs

A combination of the three preceding cost components (placement, counseling, and faculty time) represents those incremental personnel costs likely to vary directly with program size. The combined annual incremental variable cost for these personnel functions in the typical school amounts to $149 per student. As was true for most of the separate components, new programs, IV-D programs, and programs in public institutions have higher overall per student variable costs. At the same time, 2-year schools and schools with co-op programs in low unemployment States have higher

annual incremental variable personnel costs. This latter result is due to the previously mentioned anomoly with placement costs. In terms of program size, combined per student variable costs steadily decrease as the total co-op enrollment increases. Thus, the annual personnel costs do not increase proportionally as co-op enrollment increases.

4. Total Annual Incremental Operating Costs

Once the initial set-up costs have been incurred and the program is underway, the total annual operating costs of a school's mix of co-op programs above those required for traditional educational programs can be found by summing the fixed and variable incremental components. In the present case, only the major incremental costs have been measured, but it is nevertheless instructive to ascertain these totals because they will provide some idea of the variations in the increased personnel costs which are the major program cost item. Exhibit 4.12 presents the annual incremental personnel costs, or annual incremental operating costs, on both a total and a per student basis. *For all schools combined, the annual personnel operating costs of a school's co-op programs is $22,633 or $281 per student.*[1/]

Schools receiving IV-D funding expend more dollars than non-IV-D schools, both in terms of total costs as well as on a per student basis. This is a function of both the co-op director's salary (a fixed cost), since IV-D schools are much more likely to have a full-time director for their co-op program, and the placement cost (a variable cost). In terms of total costs, 2-year schools have somewhat larger incremental operating costs, although, because 2-year programs tend to be larger, the costs in the two types of schools are almost equal on a per student basis. Co-op programs in private schools have slightly higher operating costs on a per student basis due to a greater likelihood of there being a full-time co-op director in private as compared to public institutions and the smaller program sizes in private schools. By the same token, while old programs have slightly higher total incremental

1/ These figures do not allow for overhead. This is added in Part C of this chapter.

EXHIBIT 4.12 MEAN ANNUAL INCREMENTAL TOTAL AND PER STUDENT CO-OP OPERATING (SUM OF ANNUAL FIXED AND VARIABLE) COSTS BY INSTITUTIONAL CHARACTERISTICS 1/

CHARACTERISTICS	MEAN OPERATING COST 3/	
	Total	Per Student
Total	22,633	281
IV-D Funding:		
Yes	33,341	318
No	12,189	228
Program Length:		
2-Year	27,236	292
4-Year	19,556	277
Ownership		
Public	23,413	277
Private	24,432	317
Program Age:		
Old 2/	24,127	200
New	22,155	412
Unemployment:		
High	21,319	268
Low	24,235	298
Co-op Enrollment:		
Less than 80 students	20,342	478
80-219 students	28,797	229
220 or more	53,007	110

1/ Measured in 1975-76 dollars: excludes initial program set-up costs.

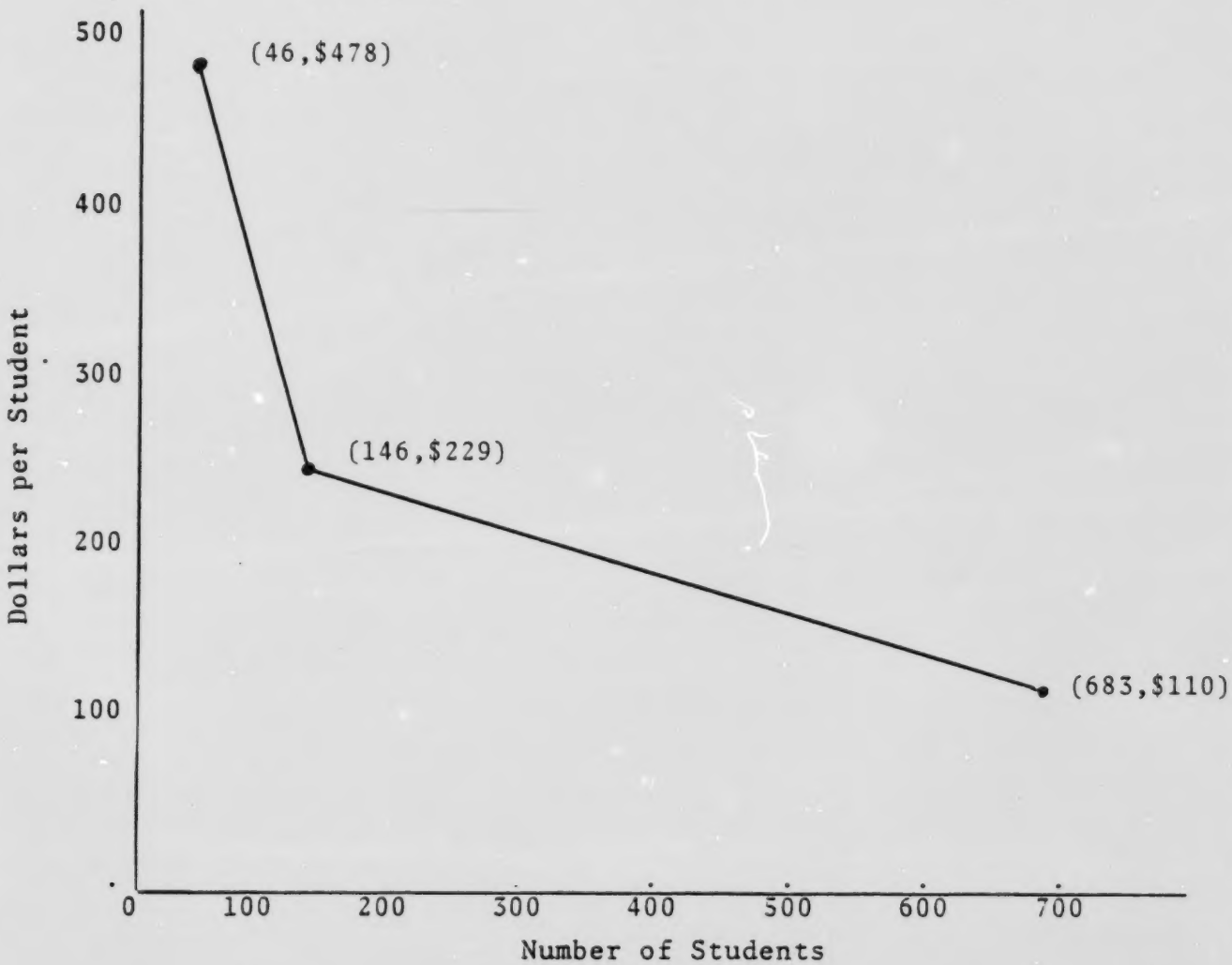
2/ An old program is defined as one which admitted its first students prior to the 1974-75 academic year.

3/ These cases include no allowances for overhead.

operating costs, because they are much larger, they actually have substantially lower per student costs of operation. Co-op programs in high unemployment States have almost the same total and per student incremental operating costs as those located in low unemployment States.

As expected, annual incremental co-op operating costs (at least the personnel components) are highly related to co-op program size. Total costs increase monotonically with the number of students enrolled in the co-op program, although not proportionally. This is shown clearly in Exhibit 4.13 as per student costs drop continually as the program size increases.

EXHIBIT 4.13: MEAN ANNUAL INCREMENTAL PER STUDENT CO-OP OPERATING COSTS BY MEAN PROGRAM ENROLLMENT IN EACH TERTIAL SIZE GROUP



Thus, it is clear that very small programs must operate at higher costs because they have fewer students over whom to spread the fixed cost components and are not able to take advantage of the reductions observed in some of the per student variable cost components. Due to the sparseness of the data and the limited range of program sizes in the sample, it was not possible to observe the programs of sufficient size so that the annual per student variable (and total) personnel costs begin to rise due to scale diseconomies. However, what is clear is that to be self-sustaining, co-op programs need to generate between $110 and $478 per student per year in revenue, with the exact amount being largely a function of the program's size. This finding supports the notion of providing Federal assistance to newer programs which cannot be expected to have sufficient students enrolled in the early program years to operate cost-effectively. What is particularly relevant from the Federal policy standpoint is that the cost per student in the old programs (those two or more years old in our study) was only $200, an amount which should be fairly easy to recover through a combination of tuition and/or ADA payments, especially if such payments are provided for the student's work experiences when the above represents virtually all of the students' direct costs to the institution.

B. Analysis of Annual Incremental Institutional Benefits

In this subsection, the financial benefits which accrue to institutions of higher education as a result of their participation in cooperative education will be described. There are two major categories of monetary benefits accruing to institutions with cooperative education programs which may offset the costs described previously. The first of these are the IV-D funds and other revenues which are specifically earmarked for co-op. The second category of financial benefits stems from any tuition and/or Average Daily Attendance (ADA) support received during the period of the student's work experience. During this period, the student does not consume resources at the same level that would be consumed if he/she attended classes. Therefore, the support received for such "attendance" can be considered an incremental benefit to the institution. An indication

of the typical levels of monetary benefits from those two factors is presented below.

1. Financial Benefits from Outside Funding

Monetary benefits which accrue to institutions as a result of their co-op participation can be divided into two categories: IV-D revenue and revenue from other sources specifically designated for co-op. The institutions' fiscal officers were asked to quantify the amount of co-op funding from various sources, and these were tabulated according to institutional characteristics, as shown in Exhibit 4.14. For non-IV-D funds, the results were also broken down according to whether the institution also received IV-D funding. The results of the tabulations from the 43 schools indicated that IV-D funds were present as shown in column 1 of Exhibit 4.14. These figures indicate that while there were some minor differences by institutional characteristics, none of these variables was found to be a significant factor in determining the level of IV-D funds. Also note that these grants represent fixed benefits since their sizes are not directly related to the co-op program size.

In addition to Title IV-D funding for co-op, the fiscal officers in the sample were asked to enumerate funding from all the other sources which were specifically earmarked for the co-op program. These other earmarked funds are obtained from such sources as the Vocational Education Act (VEA), Title III of the Higher Education Act, selected State appropriations, some private funding sources, and other miscellaneous sources. Column 2 of Exhibit 4.14 presents the typical amounts of such funding by selected institutional characteristics for only those schools receiving some funds of this type. (Most schools in the sample did not receive any such funds.) When such other funds are received, 4-year schools, and those in high unemployment States receive somewhat greater amounts. As with the IV-D funds, there seems to be no relationship between the number of co-op students enrolled and the amount of co-op funding from non-IV-D sources.

EXHIBIT 4.14: MEAN TOTAL ANNUAL INCREMENTAL FUNDING (IV-D AND OTHER FUNDING SPECIFICALLY EARMARKED FOR CO-OP) BY INSTITUTIONAL CHARACTERISTICS[1]

CHARACTERISTICS	IV-D GRANTS RECEIVED			OTHER FUNDING RECEIVED			TOTAL FUNDS RECEIVED[2]		
	Number[4]	Total	Per Student	Number[4]	Total	Per Student	Number[4]	Total	Per Student
Total	30	25,554	345	16	32,941	702	37	35,033	579
IV-D Funding:									
Yes	30	25,554	345	11	30,668	820	32	35,611	625
No	--	--	--	5	37,941	268	5	32,044	218
Program Length:									
2-Year	14	26,214	470	6	23,380	1438	17	30,193	860
4-Year	16	24,976	237	10	38,077	292	20	39,147	341
Ownership:									
Public	24	25,317	338	15	32,749	700	31	35,329	596
Private	6	26,500	375	1	35,824	716	6	32,471	494
Program Age:									
Old[3]	18	25,090	153	12	33,331	181	23	37,025	217
New	12	26,250	634	4	31,771	2003	14	31,760	1120
Unemployment:									
High	14	24,620	218	9	36,559	249	18	37,428	297
Low	16	26,371	456	7	28,289	1305	19	32,764	844
Co-op Enrollment:									
Less than 80 students	10	26,500	752	4	32,994	2068	13	30,733	1220
80-219 students	12	24,304	198	6	27,832	229	13	35,280	279
220 or more	8	26,246	74	4	30,218	44	9	36,760	85

[1] Measured in 1975-76 dollars; zero values excluded (i.e., only schools receiving such funds are included).

[2] Since those schools receiving one type of funding often do not receive the other type of funding, the totals (means) in this column are less than the sum of the totals (means) of the first two columns.

[3] An Old program is defined as one which admitted its first students prior to the 1974-75 academic year.

[4] Number of institutions for which the means were calculated.

For most schools, either IV-D or other co-op earmarked funds are received, but not both, and thus the means in the total funding column (column 3 of Exhibit 4.14) are much less than the sum of the two means in the preceding IV-D funding and other funding columns. It is interesting to note that the influence of the non-IV-D funding was dominant in terms of relative magnitude of the total co-op fixed benefit funding. That is, even though high unemployment, old, and 4-year programs typically receive somewhat less IV-D funding, they often receive more support from non-IV-D funding sources and this carries over to the total fixed benefit funding where these program attributes are associated with somewhat higher funding levels. It is also interesting that public schools typically receive less IV-D funding and less non-IV-D funding; but, when considering both types of funding combined, the public school receives more funding. This is primarily because more public schools, which include most of the 2-year schools, are eligible for co-op support under the Vocational Education Act, and thus attract both types of funding. In fact, only one private school in the sample received non-IV-D funding especially for co-op. Finally, in spite of any observable relationship between program size and either type of funding, the combined funding shows a very weak but positive relationship with program size.

2. Tuition Savings

The other major financial benefit that can accrue to institutions offering cooperative education stems from the potential tuition savings during the period of the student's co-op work experience.[1/] Typically, tuition is collected from each student

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1/ The discussion will mainly concern itself with tuition, even though the arguments hold equally well for Average Daily Attendance (ADA) funds received by institutions which report the co-op student as attending during the work experience. Unfortunately, these data were not acquired during the course of the study, so that the limitation of the discussion to tuition is understating the benefits accruing to an institution as a result of establishing a cooperative education program.

to cover the costs associated with the student's attendance at school. When a student in a co-op program is off-campus on a work experience, a reduced level of school resources is being consumed for this off-campus time. This is true whether the program is parallel or alternating. Nevertheless, in most cases, the school continues to collect tuition for those off-campus work experiences. (Over 70% of the schools in the sample stated that tuition was charged during this period of time.) Thus, the proportion of funds for which there is not a corresponding consumption of resources (regardless of whether the program has additive or non-additive credit) must be counted as a financial benefit to the institution resulting from the impact of a cooperative education program. To determine the relative magnitude of these savings, assuming that tuition is charged for the off-campus work experience, the amounts typically charged during work periods were tabulated by institutional characteristics.

The mean tuition collected per student per year by each school charging tuition was $148. In addition to the expected finding that tuition charges are higher in Private schools than in public schools ($127 vs. $298), it was found that IV-D schools, 4-year schools, new programs, and programs located in high unemployment States tended to charge greater tuition during the period of student co-op work experience. The impact of these patterns of financial savings on the overall net costs and benefits to an institution of conducting a cooperative education program is discussed in Subsection C.

C. Net Benefits to Institutions

This subsection will attempt to compare the costs and benefits of the co-op participation of an institution under a variety of assumptions. Before calculation of the net benefits under a variety of revenue assumptions, however, consideration should be given to the understatement of costs to this point. It is clear that all of the annual incremental non-personnel costs associated with the co-op particiaption of an institution such as travel, supplies, plant and equipment, telephone, and postage, have not been accounted.

While the incremental costs associated with co-op involvement are likely to be negligible for some of these non-personnel costs (e.g., plant and equipment other than for the co-op administrative staff), the cumulative magnitude of these items should not be ignored.

By the same token, many of the relevant incremental personnel costs associated with co-op praticipation have not been measured. This includes, for example, the time spent by faculty in attending co-op orientation meetings, the necessity for more frequent course offerings, and the time spent in designing and scheduling special co-op courses. More importantly, however, are the traditional overhead and fringe benefit costs associated with the direct personnel cost which have not yet been included. It is reasonable to assume that, if positive incremental personnel costs due to co-op participation have been identified, then incremental overhead and fringe benefit costs should also be assigned to co-op participation.

Therefore, in order to properly account for all of the unmeasured incremental costs of co-op participation, a high, but still reasonable, overhead rate of 80 percent was applied to the operating cost figures. The resulting operating cost figures are presented in column 1 of Exhibit 4.15. Comparing these costs with several alternative benefit assumptions (see the remaining columns of Exhibit 4.15) should provide very realistic net benefit calculations; and, since the benefits resulting from Average Daily Attendance (ADA) financing could not be measured, many of the net benefit calculations provide a fortiori arguments for participation in cooperative education by an institution.

The first column on Exhibit 4.15 clearly shows that, without some revenue generation activity on behalf of the co-op program, the costs of operating such a program can be substantial. While the figures vary by institution and program characteristic, the overall annual per student cost to the school is $511. Fortunately, the loss increases less than proportionally as the number of students increases but the loss is still substantial. Column 2 of Exhibit 4.23 shows that reliance on tuition as the only revenue sources will,

EXHIBIT 4.15: MEAN ANNUAL INCREMENTAL NET BENEFITS OF CO-OP PARTICIPATION UNDER ALTERNATIVE REVENUE AND COST ASSUMPTIONS BY INSTITUTIONAL CHARACTERISTICS 1/

Characteristics	ALTERNATIVE COST AND REVENUE ASSUMPTIONS							
	No Revenue	Tuition Only	IV-D Only	Non IV-D Only	Fixed Benefit Only	Tuition And IV-D Only	Tuition And Non-IV-D Only	Tuition And Fixed Benefits 2/
Total	-511	-363	-166	191	68	-18	339	216
IV-D Funding:								
Yes	-572	-401	-166	248	53	-56	419	224
No	-410	-285	--	-142	-192	-285	-17	-67
Program Length:								
2-Year	-526	-419	-56	912	334	51	1019	441
4-Year	-499	-308	-262	-207	-158	-71	-16	33
Ownership:								
Public	-499	-372	-161	201	97	-34	338	224
Private	-571	-273	-196	145	-77	102	443	221
Program Age:								
Old	-360	-222	-207	-179	-143	-69	-41	-5
New	-742	-569	-108	1261	378	65	1434	551
Unemployment:								
High	-482	-298	-263	-233	-185	-79	-49	-1
Low	-536	-420	-80	769	308	36	885	424
Co-op Enrollment:								
Less than 80 students	-860	-655	-108	1208	360	99	1415	567
80-129 students	-412	-319	-224	-183	-133	-131	-90	-40
220 or more	-198	-43	-124	-154	-113	31	1	42

1/ Measured in 1975-76 dollars; all figures represent the addition and/or subtraction of means as presented in previous exhibits and do not correspond to the means of net figures computed for individual schools.

of course, reduce the net loss, but is not sufficient to run the program in the black. The total net loss under this assumption falls to $363. The financial position looks better for the larger programs on a per student basis because of the less than proportional increase in total operating costs, compared to the more or less proportional income in total tuition benefits, but on a total loss basis they are probably worse off. Only for program sizes outside of the range shown is it likely that the total loss would be reduced and the per student loss eventually turned into a net gain. It is remarkable, however, how much the mean net loss for private

schools was reduced through the application of tuition revenues, so that the conclusions drawn above for all institutions relative to program size may not hold for private facilities. Their co-op programs may become economically viable using tuition as the only revenue source if they expand their size sufficiently. Further indication of the validity of this theory is provided by noting that most of the large private schools with virtually compulsory co-op programs (e.g., Northeastern University) appear to be thriving with little outside support for operating their co-op program.

Turning to IV-D funding, it is clear that this funding source is insufficient to cover the operating costs of most co-op programs. The average loss with this funding was only $166. It is interesting, however, that this funding source is concentrated in those areas where the costs are the highest: 2-year, new programs. In these areas, the funding is sufficient to cause the net loss to be less than in 4-year and old programs. Lastly, because of the fixed nature of this benefit, it is clear that it covers more nearly costs in small programs than in large programs in spite of the same relationship between operating cost and size.

The figures shown for non-IV-D funding must be interpreted with caution because of the small number of schools receiving such funding.[1/] For those schools receiving such funding, however, many found these sources to be adequate to make their programs economically viable with the average gain being $191. Just as with IV-D funding, the schools taking the most advantage of these non-IV-D sources are 2-year schools with new programs in low unemployment areas. These funds also are able to fully cover the operating costs of small programs because of their lump sum nature.

Combining the IV-D and non-IV-D funding sources produces the same patterns as the two component parts. For all facilities receiving one or both of these types of funding, a net benefit of $68 is produced. Again, in spite of higher operating costs, the 2-year program in low unemployment States are the only ones to cover their

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1/ The per student figures were calculated only for those schools receiving such funding.

operating costs with these sources alone. It also appears as if public schools, but not private schools, are able to fully cover costs with lump-sum grants. Finally, only the smallest programs can cover operating costs with the fixed grants. However, as the programs grow, the total operating costs increase whereas the benefits from these sources do not.

The addition of tuition to either of the lump-sum components produces the expected results. Tuition and IV-D funding combined results in a net loss of only $18 per student per year for those institutions receiving IV-D funding, whereas tuition and other lump-sum funding combined produces a net "profit" of $339 per student per year for those receiving non-IV-D funding. In both cases, the IV-D schools with 2-year programs that are new and in low unemployment States accrue the higher net benefits (or the least loss). The smallest programs fare the best on a per student basis but even the larger schools are able to cover their operating costs with lump-sum funding plus tuition. Lastly, it is interesting that private schools are placed in a preferred financial position because of the addition of the greater tuition revenues.

The net per student gain for co-op programs is $216 per student per year with all forms of revenues combined. The pattern is essentially the same as when considering the separate lump-sum tuition combinations, except that both lump-sum sources combined serve to cause an impact on public schools which matches the impact of tuition on private schools. The most striking feature of the total funding assumption figures is the small number of losses observed. The only true losses are for those schools <u>not</u> receiving outside funds and some programs in the middle size tertial. This is because the programs are large enough to spread out the fixed benefits but not large enough to yet take full advantage of the non-proportional increase in total incremental operating costs. The implications are clear: either stay small or expand beyond the middle tertial range (i.e., approximately 200 students).

In conclusion, therefore, it appears that the range of financing available for co-op programs is sufficient to at least cover the

costs incurred as a result of the co-op programs. This conclusion is all the more important when it is recalled that the ADA funding, state and local revenues, and endowment income has not been taken into account. It is also clear that selected types of programs do not need to access the full range of sources to fully cover their operating costs (e.g., private schools charging tuition for co-op do not appear to need outside funding after reaching a certain size). These conclusions, of course, assume that these sources continue to be available to each school in the assumed mixes of Exhibit 4.15, and this is not altogether certain. For example, IV-D funding is critical to many program types, but cannot be relied upon as a perpetual funding source. The same may be said of the other lump-sum funding sources. Only tuition can be relied upon and it is by itself not sufficient. There is some relief if the program is large enough to take advantage of the less than proportional increase in operating costs, but few programs are of the necessary size. Finally, it should be recalled that these figures do not control program discipline areas so that the applicability of the reported figures to any given school (and its particular mix of discipline areas) is unknown.

Thus, it appears that the IV-D strategy of providing support to emerging programs and to those programs wishing to expand is sound, since it is when the programs are smaller that additional support is needed. Finally, the Federal policy of cutting off support under IV-D after three years (five under the 1976 Amendments) appears equally sound, assuming that this is sufficient time for the programs to become large enough to be economically viable using a combination of tuition and/or ADA. Given these findings, it may be advisable to consider a policy in which Federal funding decisions would be linked directly to the size of the program in relation to the overall size of the institution and its rate of growth during past years when Federal funds were, or were not, available to promote the growth of co-op.

An additional recommendation resulting from these findings would be that it would be advisable for the different USOE programs providing support for co-op--primarily the HEA and VEA program staffs--to coordinate their grant procedures because schools receiving assistance under both programs may gather more funds than they actually need to support the program.

IV. ANALYSIS OF CO-OP STUDENT EMPLOYER COSTS AND BENEFITS

The purpose of this section is to measure the costs and benefits incurred by employers who participate in the cooperative education system. The employers' view of the costs relative to the benefits of co-op participation will, to a large degree, determine whether they decide to continue or discontinue their participation in co-op. If employers view co-op students as a sound economic source of manpower, participation will continue. If not, continued participation is in doubt and expansion is out of the question. Therefore, any evaluation of the present or future status of the cooperative education system must entail a careful examination of how the various co-op employers view the costs and benefits incurred from participation in co-op.

In order to accomplish this goal, primary data collected from co-op and non-co-op employers on the incurred costs and benefits are analyzed in this section. While the sample of co-op and non-co-op employers drawn was not representative of all employers in each group, the sample was sufficiently large (approximately 250 co-op employers and 125 non-co-op employers), and the questionnaire was sufficiently detailed to provide a thorough examination of the costs and benefits attributable to employing co-op students. Information was collected on the costs incurred by co-op employers in relation to the training, supervision, evaluation, etc. of co-op student employees and how these costs compare to those for regular employees. Likewise, information was gathered on the benefits (e.g., reduced recruitment costs, higher productivity, etc.) derived by employers from hiring co-op

students. Information on net gains was also derived from co-op employers through questions regarding their plans for future participation in co-op. Analysis of variance and Chi Square analysis were used in determining the statistical significance of relationships noted in the responses of employers to these cost- and benefit-related questions.

A. Employer Sample Characteristics

The samples of co-op and non-co-op employers used in the primary data collection were not drawn to be representative of all employers in each group. Instead, employers were selected on the basis of their association with sample schools. In the case of co-op employers, the two firms employing the most co-op students from each sample school--within a 20-mile radius--were chosen. One non-co-op employer was also selected within a 20-mile radius of each sample school, which was similar to one of the selected co-op employers, and which had been approached for participation in the co-op program but declined.

The general characteristics of co-op employers shown in Exhibit 4.16 include size and type of firm as well as whether the firm's employees are unionized or not. As the exhibit indicates, over half the firms had 150 or fewer full-time employees and 70 percent had less than 500 employees. In terms of the type of industries in the co-op employer sample, it appears that they are concentrated largely (over two-thirds) in the nondurable goods and private service industries. Included in the private service sector are industries involved in Wholesale and Retail Trade, Finance, Insurance, and Real Estate. Less then 30 percent of the co-op employers utilize unionized employees.

Also described in Exhibit 4.16 are characteristics of co-op firms relating to their employment of co-op students. Nearly 30 percent of the co-op firms employ only one co-op student and almost 60 percent employ four or less co-op students. The median number of co-op

EXHIBIT 4.16: DISTRIBUTIONS OF FIRMS IN CO-OP EMPLOYER SAMPLE BY SELECTED CHARACTERISTICS

CHARACTERISTICS OF CO-OP EMPLOYERS	NUMBER OF CO-OP EMPLOYERS[1/]	PERCENT OF ALL CO-OP EMPLOYERS
General Characteristics		
Size of Firms:		
1-30 Full-time employees	69	31
31-150 Full-time employees	52	23
151-499 Full-time employees	35	16
500 or more Full-time employees	68	30
Type of Industry:		
Durable goods	55	24
Nondurable goods and Private service sector	158	67
Public service sector	21	9
Industrial Relations Structure:		
Unionized	69	29
Non-unionized	165	71
Co-op Related Characteristics		
Number of Co-op Students Employeed:		
1 co-op student	66	29
2-4 co-op students	67	30
5-10 co-op students	43	19
10 or more co-op students	50	22
Length of Time Firms Have Employed Students:		
3 years or less	26	28
4-5 years	17	19
6-10 years	25	26
11 years or more	24	27
Type of Jobs Held by Co-op Students:		
White collar	165	76
Professional and technical	84	39
Managers and administrators	20	9
Sales workers	11	5
Clerical workers	50	23
Blue collar	26	12
Service workers	27	12
Average Length of Time Student Remains with Firm:		
1-6 months	90	40
7-12 months	86	38
13 or more months	49	22
Union Membership of Co-op Student:		
Required	9	4
Not required	201	96

students employed by each firm was found to be slightly less than three students. The data in Exhibit 4.16 also indicate that the majority (53%) of co-op firms have participated in co-op for five or more years. The jobs given co-op students by firms in the employer sample tend to be in white-collar occupations (76%). More specifically, nearly two-fifths of the jobs filled by co-op students are in the professional and technical area. Over one-fifth of the co-op students are with their employer for one year or less. And finally, almost all of the co-op firms sampled (96%) do not require co-op student employees to join a union.

In summary, the sample of co-op employers used in the primary data collection effort appears to be sufficiently diversified to enable analysis of costs and benefits for a variety of employer types. Although the sample drawn does not permit analysis by detailed industrial or occupational categories, it is adequate for an analysis of costs and benefits by major industrial and occupational breakdowns. Furthermore, the sample included an adequate representation of union and non-union firms and firms hiring from IV-D funded and non-IV-D funded schools to permit analysis of costs and benefits by these characteristics as well as several others. Although it is not possible to assess how representative this sample is of all co-op employers (since no known source of descriptive data on the universe of firms employing co-op students exists), it is apparent that this sample enables one to analyze many characteristics of co-op firms which are likely to impact on the costs and benefits of employing co-op students.

B. Co-op Student Employer Costs

Firms incur costs of several different types by employing co-op students. Start-up costs, for example, are incurred by the co-op employer to the extent that initial participation in the co-op program requires negotiations with one or more schools. Other personnel costs incurred by employers, such as wages, interviewing, training, etc. are not unique to co-op student employees but may be differentiable.

Therefore, when costs are common to both co-op student employees and regular employees, the relative costs are compared.

For the purposes of this study, the personnel costs to firms are divided into two major categories: direct and indirect costs. Direct costs include those related to initiation of the co-op programs: start-up activities, training, wages, evaluation, and supervision. The indirect costs examined are turnover among employees, union negotiations, and customer relations. Each of these costs is examined for co-op student employers as a whole, and by various characteristics associated with the employers such as firm size, number of schools from which the firm draws co-op students, and length of time the firm has been employing co-op students.

1. Direct Costs of Co-op Student Employers

a. Start-up Costs

The start-up costs to a firm of participation in a co-op program are those associated with conducting initial negotiations with schools. During such negotiations, corporate management works out the terms of the agreement with each school's co-op program officials. This cost item is unusual in that, in contrast to most other co-op-related costs, it is uniquely associated with co-op participation and it is a once-and-for-all outlay at the initiation of a program with a school.

In order to measure this cost, data were collected on the number of staff hours devoted to initial negotiations with schools. Based on these estimates, it was determined that the mean number of hours spent by employers in negotiations with a school was five hours. This was also computed according to the size of the firm, the presence of IV-D funding, the job categories in which co-op students were placed, the level of unemployment in the state, and by the number of co-op schools with which the firm participates. However, no statistical differences were noted in the mean hours spent in negotiation broken down by these characteristics.

The lack of a significant difference is a particularly surprising finding in the case of mean hours of negotiation broken down by the number of schools with which the firm participates (negotiates). It implies that no discernable cost savings accrues to a firm that has experience in negotiating with co-op schools. Therefore, as firms deal with an increasing number of schools, the incremental (marginal) start-up costs do not diminish. We also found that larger firms tend to draw co-op students from more schools, and, therefore, incur proportionally larger start-up costs.

b. Compensation Costs

Compensation costs include wages, vacation and sick leave, and other fringe benefits. Data were collected on whether employers compensate co-op students more, less, or the same, in terms of these three items, as regular employees. *Exhibit 4.17 indicates that a much larger proportion of employers pay co-op students lower wages, compared to regular employees, than pay them higher wages.*[1/] *This phenomenon holds true for vacation and sick leave and other fringe benefits as well as for wages.* A Chi Square test was used to test the statistical significance of these differences and they were all found to be significant at tht 95 percent level. Thus, it would appear that roughly half of the co-op employers incur less cost, in terms of direct compensation to the employees, when a co-op student performs a given task as opposed to a regular employee (assuming equal levels of productivity).

It should be noted, however, that the difference between the vacation and sick leave and other fringe benefits of co-op students compared to regular employees may simply reflect the fact that over three-fourths of the co-op students are with a firm for one year or less. These types of compensation, of course, are especially dependent on the length of time an employee is with a firm. For this

1/ However, it should be noted that 45 percent pay the same wages, and 47 percent provide the same key fringe benefits.

EXHIBIT 4.17: DISTRIBUTION OF FIRMS ACCORDING TO CO-OP STUDENT COMPENSATION RELATIVE TO REGULAR EMPLOYEES BY TYPE OF COMPENSATION 1/

CO-OP STUDENT COMPENSATION RELATIVE TO REGULAR EMPLOYEES	TYPE OF COMPENSATION					
	WAGES OR SALARY		VACATION TIME, HOLIDAYS, AND SICK LEAVE		OTHER FRINGE BENEFITS	
	Number	Percent	Number	Percent	Number	Percent
More	17	7.9	3	1.4	3	1.4
Less	102	47.2	111	51.6	113	52.8
No Difference	97	44.9	101	47.0	98	45.8

1/ Percentages are for columns.

reason, and the fact that wages comprise the major portion of total compensation paid to employees, the Chi Square analysis will focus largely on wages as opposed to the other forms of compensation.

Co-op students' wages relative to those of regular employees were than cross-tabulated according to the size of the firm, the job categories of the employees, the presence of IV-D funding, the level of unemployment, the length of the program, and by whether the co-op student employees were required to join a union. Exhibit 4.18 provides the results of the cross-tabulation of co-op students' wages relative to regular employees by firm size. It appears that small firms tend to save on wage costs more often than larger firms when

EXHIBIT 4.18 DISTRIBUTION OF FIRMS ACCORDING TO CO-OP STUDENT WAGES RELATIVE TO REGULAR EMPLOYEES BY FIRM SIZE 1/

CO-OP STUDENT WAGES COMPARED TO REGULAR EMPLOYEES	NUMBER OF EMPLOYEES (FIRM SIZE)							
	1-30		31-150		151-499		500 or more	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
More	3	4.8	5	10.6	5	14.7	4	6.3
Less	38	61.3	19	40.4	9	26.5	30	46.9
No Difference	21	33.9	23	48.9	20	58.8	30	46.9

1/ Percentages are for columns.

using co-op students to perform tasks rather than regular employees. Column 1 indicates that the majority (61.3%) of the firms with 30 employees or less pay co-op students less than regular employees, while only 46.9 percent of the largest firms (column 4) pay co-op employees less than regular employees. One possible hypothesis that would explain the fact that smaller firms pay co-op students less relative to regular employees is that greater wage flexibility exists in the wage structure of small firms, and thus, they can pay lower wages to less experienced personnel.

Wages of co-op employees relative to those of regular employees were examined, based on whether the co-op employee was required to join a union or not. Only four percent of the employers required co-op students to join a union, but in all nine instances where co-op students were required to join a union, there was no difference observed between the wages received by co-op students and regular employees. On the other hand, almost half of the co-op students working for employers not requiring union membership were paid less than regular employees.

Finally, significantly different distributions of firms were indicated when segregated by the length of the program being considered. Exhibit 4.19 shows that a significantly higher proportion of the employers pay lower wages to co-op students from 4-year programs. Such differences were not observed by student job category (the most likely explanation for these findings), but another explanation is that the higher salaries in 2-year programs are a reflection of the nature of the jobs in which students are placed with the 2-year students becoming fully productive faster due to the non-professional nature of the work performed.

EXHIBIT 4.19: DISTRIBUTION OF FIRMS ACCORDING TO CO-OP STUDENT WAGES RELATIVE TO REGULAR EMPLOYEES BY LENGTH OF PROGRAM 1/

CO-OP STUDENT WAGES RELATIVE TO REGULAR EMPLOYEES	LENGTH OF PROGRAM			
	2-YEAR		4-YEAR	
	Number	Percent	Number	Percent
More	12	9.8	5	5.3
Less	42	34.4	60	63.8
No Difference	68	55.7	29	30.9

1/ Percentages are for columns

c. Training Costs

Training costs for co-op students and regular employees were measured through questions on the number of hours devoted to the training of each type of employee. This training included orientation classes, training sessions, and the use of training aids and equipment. On average, 89.9 hours were spent training co-op student employees, compared to 90.6 hours for the training of regular employees. These means were not found to be significantly different from one another as measured by a t-statistic at the 95 percent level of confidence.

d. Supervision Costs

The supervision costs incurred by the employers of co-op and non-co-op employees were measured in terms of the number of hours per week which typically were devoted to supervising each type of employee. The average number of hours of supervision per week devoted to a co-op student was 11.4, as compared to 10.7 hours for a regular employee. These means were not found to be significantly different from one another as measured by a t-statistic at the 95 percent level of significance.

However, it was found that those employers hiring co-op students from 4-year programs devoted substantially more hours per week to supervision than did those hiring co-op students from 2-year programs. This increased supervision time is likely a reflection of more intensive informal on-the-job training required, and certainly consistent with the more frequently observed negative wage differential for employers of those students.

e. Evaluation Costs

Several questions regarding the evaluation of co-op students were asked of co-op student employers. None of the responses, however, permitted the calculation of the average amount of time spent per evaluation of a co-op student as compared to a regular employee. While the majority of co-op employers responded that co-op students require about the same amount of evaluation time as non-co-op students, three times as many employers reported more time was spent with co-op students than reported less time. This suggests that more evaluation time is required for the average co-op student than for the regular employee (i.e., that evaluation costs are somewhat higher for the co-op student than the regular employee). This is probably a direct consequence of the co-op employer's participation in the school's evaluation and/or grading of co-op students. Thus, this cost is more related to the nature of the program than it is to the nature of the employees. It is a cost of participation.

2. Indirect Costs to Co-op Student Employers

In addition to the costs incurred which are directly related to the number of co-op students employed, firms may incur costs indirectly from their participation in co-op. For example, union negotiations may be more complicated or protracted when co-op students have become employees; the rapid turnover of co-op students may have a disruptive effect on regular employees, causing some loss of productivity; or customer relations may potentially suffer if co-op students, less mature or experienced than regular employees, handle problems with customers poorly. Each of these types of potential indirect costs is examined in the three following subsections.

a. Turnover Costs

In order to compare turnover costs associated with co-op students to those related to regular employees, employers of co-op students were asked if their turnover costs associated with co-op students were more, less, or the same as those related to regular

employees. Although more employers reported less turnover costs attributable to co-op employees than reported more, the distribution obtained is not significantly different. Thus, it would appear that despite the short-term nature of co-op students' employment with a firm, very little disruption of normal activities occurs when these employees depart and no significant additional expense is involved.

b. Union Negotiation Costs

Information on union negotiation costs was obtained from co-op employers through a question concerning whether union negotiation costs were more, less, or no different for co-op students compared to regular employees. Nearly 70 percent of the employers reported no difference in union negotiations for co-op versus non-co-op employees. Although the majority of employers reporting cost differences responded that co-op students cost less, the proportion of co-op employers reporting cost differences was not sufficient to attach statistical significance to these responses.

c. Customer Relations

One might hypothesize that the comparative inexperience of a co-op employee relative to a regular employee would cause co-op students to handle problems with customers less cleverly and hence, hinder customer relations. In order to examine how employers perceived customer relations costs attributable to co-op students versus regular employees, they were asked to describe their costs for co-op students compared to regular employees in terms of it being more, less, or the same. Over three-fourths of the employers responded that co-op and non-co-op employees have the same effect on customer relations costs. Interestingly, of those employers who did view the costs differently for co-op and non-co-op employees, more than four times as many reported that co-op students cost less than reported that they cost more. However, because the proportion of co-op employers reporting cost differences was so small (23 percent), no statistical significance can be attached to these differences.

3. Summary

In summary, eight different types of costs (both direct and indirect) incurred by co-op employers when examined in this section. Comparisons were made between those for co-op students and those for regular employees, except, of course, in the case of program start-up costs, which are not associated with regular employees. The one area where co-op students costs were greater than regular employees was evaluation costs. On the other hand, all forms of compensation costs--wages, vacation time and sick leave, and other fringe benefits--were less for co-op student employees than for regular employees. Other cost categories (formal training, supervision turnover, union turnover, union negotiation, and customer relations) did not yield statistically significant overall differences between those for co-op and regular employees. Unfortunately, it is not possible to associate a monetary value to all of these costs and obtain a figure giving the net cost savings of hiring co-op students. However, one can safely say that as measured by these cost factors, hiring co-op students to do many types of work is clearly less costly than using regular employees. In those instances where the individual cost items were greater for co-op students than for regular employees, it did not appear to be by a substantial margin, and the cost was not a major cost to the employer in terms of total costs.

While many of the cross-tabulations of these cost factors by characteristics of the firms employing co-op students did not yield statistically significant results, two important conclusions can be drawn from the cross-tabulations that were significant. First, from a cost standpoint, it initially appears that it is no more advantageous for large firms to participate in co-op than for small firms. Because larger firms deal with more schools, and because marginal start-up costs per school do not diminish, larger firms incur proportionately greater start-up costs. It is probable, however, that <u>on a per student</u> basis, rather than a per school basis, the start-up costs are smaller for a large firm than a small firm. In addition, the lowering of recruiting costs may be more significant for a large

firm able to deal with more schools and a larger pool of co-op students. More importantly, however, the wage cost savings from employing co-op students are less for larger firms than for smaller firms. A second finding is that the additional evaluation costs incurred by employers of co-op students diminish rapidly as the length of job tenure of the co-op student rises. Thus, the longer a firm employs a co-op student, the less likely it is that the evaluation costs will exceed, to a significant extent, those for regular employees.

On balance though, these results place the co-op student in a very good position in relation to regular employees. The analysis of the cost factors indicates that co-op employees are competitive enough to make their use economically viable.

C. Co-op Student Employer Benefits

The benefits accruing to firms that employ co-op students are examined in this section. As in the case of costs, responses to the co-op employer questionnaire are used as the data base for this analysis. The measurement of benefits to co-op employers, however, is somewhat more subjective than the measurement of their costs. For example, an employer can more accurately respond to a question regarding whether a co-op student is paid more than a regular employee than to a question regarding morale or productivity differences attributable to a co-op employee. Nevertheless, several areas can be cited in which co-op participation may potentially benefit employers. These areas include the following:

- Worker productivity;
- Recruitment and hiring; and
- Community relations.

1. Productivity Benefits to Co-op Student Employers

One broad area in which employers may reap benefits from participating in co-op programs is in terms of employee performance--essentially through increased productivity in the short-run, or over the long-run. This may come about through the superior performance

of co-op employees themselves or through the improved performance of regular employees derived from the stimulus provided by co-op students. Therefore, the first part of this section focuses on how the co-op student's performance on the job compares to that of a regular employee, and the second part concerns how the co-op student's work impacts on regular employees.

a. Co-op Students' Performance

In this subsection, the co-op student's performance on the job is compared to that of a regular employee. As one measure of performance, employers of co-op students were asked to evaluate how co-op employees compared to regular employees according to the following eight skill measures:

- Technical knowledge;
- Communication skills;
- Quality of work;
- Quantity of work;
- Cooperation, ability to work with people;
- Dependability;
- Ability to follow instructions; and
- Motivation.

The responses of the cop-op employers are presented in Exhibit 4.16. *For all eight of the skill categories, the overwhelming majority of the employers reported that co-op students perform as well or better than regular employees. Furthermore, Chi Square tests showed that for every category--with the exception of quantity of work--the differences noted are significant at the 95 percent confidence level.* It should be noted that the skill categories form two very distinct groupings with respect to the percentage of co-op employers reporting co-op students worse. Exhibit 4.20 shows that the first four skill categories form one group and the last four the other. The interesting point is that the first group can be considered firm or industry specific skills which can be improved by on-the-job experience, whereas the second group represents general skills and attributes.

EXHIBIT 4.20: PERCENT OF FIRMS ACCORDING TO CO-OP STUDENT PERFORMANCES COMPARED TO REGULAR EMPLOYEES 1/

SKILL CATEGORY	PERCENTAGE OF CO-OP EMPLOYERS REPORTING CO-OP STUDENTS BETTER	PERCENTAGE OF CO-OP EMPLOYERS REPORTING CO-OP STUDENTS THE SAME	PERCENTAGE OF CO-OP EMPLOYERS REPORTING CO-OP STUDENTS WORSE
Technical knowledge	46.5	26.3	27.2
Communication skills	47.0	38.4	14.6
Quality of work	44.7	37.9	17.4
Quantity of work	36.2	42.2	21.6
Cooperation, ability to work with other people	51.6	45.7	2.7
Dependability	44.8	49.8	5.4
Ability to follow instructions	49.8	44.3	5.9
Motivation	67.3	28.6	4.1

1/ Percentages are for rows.

In the second group of skills, co-op students are considered worse than regular employees less than half as often as in the first group of skills.

Exhibits 4.21 and 4.22 provide the results of the cross-tabulation of job category of the students and question response by quality and quantity of work, respectively. Interestingly, it appears that the occupations where co-op students perform best in terms of quality of work are the same as those where they fare best in terms of quantity of work. In Exhibit 4.21, it can be seen that co-op students perform best relative to regular employees as measured by the quality of their work in Blue Collar occupations and worst in Professional and Technical occupations. As Exhibit 4.22 demonstrates, these are the same occupations where the co-op student fares best and worst in terms of quantity of work completed. One explanation for co-op students performing better in Blue Collar occupations is that, in general, they enter the occupation with a much higher skill level, more motivation, and/or more intelligence than many workers in these fields possess.

EXHIBIT 4.21 DISTRIBUTION OF FIRMS ACCORDING TO THE QUALITY OF WORK PERFORMED BY CO-OP STUDENTS COMPARED TO REGULAR EMPLOYEES BY JOB CATEGORY 1/

QUALITY OF WORK PERFORMED BY CO-OP STUDENTS COMPARED TO REGULAR EMPLOYEES	JOB CATEGORY							
	PROFESSIONAL AND TECHNICAL WORKERS		OTHER WHITE COLLAR WORKERS		BLUE COLLAR WORKERS		SERVICE WORKERS	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Better	26	32.9	39	50.6	18	75.0	10	40.0
No Difference	32	40.5	31	40.3	4	16.7	11	44.0
Worse	21	26.6	7	9.1	2	8.3	4	16.0

1/ Percentages are for columns

EXHIBIT 4.22 DISTRIBUTION OF FIRMS ACCORDING TO THE QUANTITY OF WORK PERFORMED BY CO-OP STUDENTS COMPARED TO REGULAR EMPLOYEES BY JOB CATEGORY 1/

QUALITY OF WORK PERFORMED BY CO-OP STUDENTS COMPARED TO REGULAR EMPLOYEES	JOB CATEGORY							
	PROFESSIONAL AND TECHNICAL WORKERS		OTHER WHITE COLLAR WORKERS		BLUE COLLAR WORKERS		SERVICE WORKERS	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Better	20	25.6	27	35.1	17	70.8	10	40.0
No Difference	33	42.3	38	49.4	5	25.0	11	44.0
Worse	25	32.1	12	15.6	1	4.2	4	16.0

1/ Percentages are for columns.

Another measure of co-op students' performance relative to regular employees was obtained through a question regarding the speed with which co-op students improve their productivity. Co-op employers were asked whether co-op students improve more rapidly than regular employees, whether regular employees improve more rapidly than co-op employees, or whether they improve at the same rate. Over 90 percent of the co-op employers reported that co-op students improve more rapidly or at the same rate as regular employees.

b. Co-op Student Impact on Regular Employees

Information on how co-op students' work impacts on regular employees was derived from several questions asked of co-op

employers regarding the benefits of co-op participation. These employers were asked to rate each of the following advantages of co-op as very important, somewhat important, or not important:

- Co-op students increase the motivation and productiveness of regular employees,
- Co-op students perform work which one cannot afford to have regular employees do,
- Co-op students supplement well the work of regular employees.

The most beneficial aspect of co-op students' interaction with employees is that co-op employees supplement well the work of regular employees. Nearly four-fifths of the co-op employers viewed this as either somewhat or very important. Over half of the employees responded that co-op students were at least somewhat important in increasing the motivation and productivity of regular employees. Less than two-fifths indicated, however, that co-op students performed work that regular employees could not.

2. Recruitment and Hiring Benefits to Co-op Student Employers

In this subsection, the follwoing three measures of recruitment and hiring benefits to co-op employers are examined:

- Extent co-op participation aids firms in finding permanent employees;
- Extent co-op participation aids firms in evaluating college graduates; and
- Proportion of co-op students who become permanent employees.

a. Co-op Participation as an Aid to Firms in Finding Permanent Employees

One measure of the benefits of co-op participation to recruitment is whether employers view co-op participation as helpful in finding permanent employees. In responding to this question, co-op employers were asked to rate this benefit as very important, somewhat important, or not important. The majority of co-op employers (57.2%) viewed this benefit as very important, while less than 13 percent rated it as not important. Thus, employers view the fact the co-op participation aids them in finding permanent employees as one of the benefits from participation in co-op.

The responses of co-op employers to this question regarding the recruitment benefits of co-op participation were cross-tabulated by the unemployment level in the state where the firm was located, the size of the firm, the type of firm, the presence of IV-D funding, and the length of the program. The cross-tabulations that yielded variations from the response pattern observed for all employers that were statistically significant were those by firm size and length of program. Larger firms consider the benefit of co-op students aiding them to find permanent employees as a more important benefit than smaller firms. Nearly two-thirds of the firms with 500 or more employees view this aid to recruitment as very important, while only 45 percent of the firms employing 30 people or fewer consider it as such. This undoubtedly reflects the increased amount of hiring and recruiting in larger companies. At the same time, an examination of the responses by length of program produces a mixed picture. Clearly, more firms hiring co-op students from 4-year programs consider this benefit "very important" more often than those hiring from 2-year programs, but the response is reversed when considering "very important" and "somewhat important" combined.

b. Co-op Participation as an Aid to Firms in Evaluating College Graduates

One important element of recruitment is evaluating college graduates as prospective permanent employees. To test whether co-op participation assisted employers in this area, they were asked if co-op participation aided them significantly, somewhat, or not at all in evaluating recent college graduates as prospective permanent employees. Based on these results, it appears that most employers (73.7%) view co-op participation as helpful in evaluating college graduates. However, this recruitment benefit appears important to fewer employers than did the aid which co-op participation in and of itself provides in finding permanent employees.

c. Tendency of Co-op Students to Become Permanent Employees

One important way in which co-op participation can facilitate recruitment efforts on the part of the firms is via co-op students becoming permanent employees upon graduation. Of course, to the extent that this occurs, the firm's recruitment costs for that employee are virtually zero. In order to measure the frequency with which this phenomenon occurs, employers were asked what percentage of their co-op student employees become permanent employees upon graduation. The responses to this question indicated that an average of 37.7 percent of the co-op students, or nearly two students in five, remain with the firm upon graduation.

To examine differences which may arise in the mean proportion of students remaining with a firm, responses to this question were broken down by job category of the student, the length of the co-op program, discipline area, the presence of IV-D funding for the program, average length of time the student remains with a firm, the unemployment level of the state, and size of the firm. The breakdowns by length of time a student remains with a firm and by level of unemployment in the state, produced significantly different means. *As Exhibit 4.23 indicates, the longer a co-op student works for a firm as an undergraduate, the greater the likelihood that he will become a permanent employee with the firm. In fact, over half (53.2%) of the undergraduate co-op students that stay with a firm for more than a year become permanent employees with that firm upon graduation. At the same time, those firms located in low unemployment areas (areas with tight labor markets) increase their hiring of co-op employers as permanent employees, thereby utilizing co-op students as a visible and ready supply of labor. Both of the above, findings speak well for co-op participation as an effective recruiting mechanism.*

EXHIBIT 4.23 TENDENCY OF CO-OP STUDENTS TO BECOME PERMANENT EMPLOYEES BY LENGTH OF TIME STUDENT REMAINS WITH A FIRM AND LEVEL OF UNEMPLOYMENT IN THE STATE

CHARACTERISTICS	PERCENT OF CO-OP STUDENTS THAT BECOME PERMANENT EMPLOYEES
Length of Time with Firm:	
1-6 Months	26.6
7-12 Months	40.3
13 Months	53.2
Unemployment Level: High	31.2
Low	45.8

1/ Percentages are for columns.

3. Community Relations Benefits to Co-op Employers

A third broad area of "payoff" to a firm that participates in co-op is community relations. In this area, the jobs for which students are employed or the numbers of student employees are probably less important than the fact that the firm participates in a co-op program. The importance to firms of public relations type benefits are examined in this section through responses by co-op employers to several related questions. Co-op employers were asked if they view the following benefits from co-op participation as very important, somewhat important, or not important:

- Improves communications with schools, makes them more responsive to needs of business;
- Is good for public relations; enhances visibility of firm; and
- Provides a valuable community service.

a. Co-op Participation and School's Responsiveness to Needs of Business

One advantage of co-op participation cited by employers is that it improves the communications between schools and businesses

and tends to make the schools more responsive to the needs of business. To measure the importance of this benefit to employers, they were asked to rate it as very important, somewhat important, and not important. We found that about two-thirds of the employers view this as a very important benefit, and 93 percent consider it at least somewhat important. Thus, most employers who participate in co-op believe that the co-op program is a step toward schools responding to their needs.

b. Effect of Co-op Participation on Public Relations

In order to examine the extent of this advantage to participation in co-op, employers were asked if they considered the benefit co-op offered in terms of enhanced public relations as very important, somewhat important, or not important. The majority (53.2%) of employers viewed this as a very important benefit to co-op participation, and only about 15 percent considered it not important. In sum, it appears that the general public takes a favorable view of co-op, and this view is transmitted to individual co-op employers.

c. Co-op Participation as a Community Service

Co-op employers were also asked to what degree they benefited from co-op programs to the extent that these programs provide a valuable community service. The co-op employers were requested to rate the level of benefit as very important, somewhat important, or not important. Again, the majority (62.1%) of co-op employers rated this benefit as very important, and 94 percent rated it as either somewhat important or very important. One might hypothesize that co-op employers are providing a service to the community at large in that they facilitate the transition from "student" to "worker," and help students work their way through college.

D. Net Benefits to Co-op Student Employers

In this section, employers' net benefits or net gains from co-op participation are examined. Because few, if any, of the costs and benefits to firms employing co-op students can be quantified, a comparison of costs and benefits involves more than simple addition or subtraction. Thus, a twofold approach is taken in this section. First, the costs and benefits described in detail earlier are compared and conclusions are drawn based on this summary. Second, several indirect indications of firms' overall experiences with co-op are examined. For example, employers' plans to continue or expand their co-op participation are used as an indication of how they view the net benefits of participation in co-op.

1. Co-op Student Employer Costs and Benefits Compared

The investigation of costs incurred by co-op employers revealed that only two types of costs (start-up and evaluation costs) were higher, and only one cost (compensation) was lower for co-op employees than for non-co-op employees. All other cost items (supervision, union negotiations, customer relations, employee turnover) indicated no differences between co-op and non-co-op employees. Start-up costs--those costs related to negotiations with co-op schools upon initiation of a co-op program--are by definition associated only with co-op schools and are generally not large (on average about five hours per school). The extent to which evaluation costs for co-op employees exceed that for non-co-op employees was not measurable from the available data. However, since no appreciable difference in evaluation costs was seen between co-op and non-co-op employees when co-op students have been with the firm for more than a year, one may safely assume that the overall difference is not large.

The examination of co-op employer costs also revealed that employers tend to pay co-op student employees less than regular employees. This lower compensation included vacation and sick leave and other fringe benefits, as well as lower wages. On balance then,

in spite of the lack of any quantitative measure of these costs, one can readily say that co-op students cost employers less than regular employees. One obvious response to the lower compensation observed for co-op employees relative to regular employees is that, if one considers the productivity of each, then the compensation difference will be explained by lower co-op student productivity. Yet, when one compares the productivity of co-op students relative to regular employees (one of the benefit items examined), one finds quite the opposite--co-op students performed <u>better</u> than regular employees in seven of the eight skill areas examined. In fact, the co-op student employees performed sufficiently well to increase the motivation and productiveness of other employees.

A separate analysis of the benefits of employer participation in cooperative education identified positive benefits in two other important areas. In terms of recruitment, the majority of employers indicated that a very important benefit of co-op participation was that it aided them in finding potential permanent employees. This recruitment benefit (i.e., lower recruitment costs) was particularly important to larger firms. In fact, two-thirds of the firms that employ 500 or more persons reported that finding potential permanent employees was very important to them and over 98 percent responded that it was at least somewhat important. In the area of community relations, the majority of employers reported that their participation in co-op was a very important benefit to them. This was the case in every aspect of community relations--community service, public relations, and schools responding to the needs of business.

To summarize both the costs and the benefits, the data presented in this report incicate that the costs to employers of participation in co-op are minimal, while the benefits are numerous. The additional costs, start-up costs, and evaluation costs incurred by co-op employers are more than offset by the reduced compensation costs and increased productivity due to the hiring of co-op students.

In addition, the employer who participates in co-op is likely to receive important benefits in the areas of recruitment and community relations. Thus, it appears that the net benefits to employers who participate in co-op are substantial, and that co-op students are a sound, economical source of manpower for these employers.

5

WHAT ARE THE LIMITATIONS ON THE EXPANSION OF CO-OP IN THE UNITED STATES

This part of the study will assess the potential for expansion of cooperative education programs. Both the potential for expansion at the present time, and factors which may either aid or hamper the future expansion of cooperative education, will be investigated.

The national potential for the expansion of cooperative education must be viewed in terms of the three major participants in co-op: the students, the educational institutions, and the employers; and in terms of the potential influence of the government. Since the participants are not isolated entities, it is essential to examine their interactions and how the decisions of one participant affects those of the others. Since their actions are interdependent, the extent of co-op expansion can be affected by the behavior of any of the participants.

Outline of the Substudy

The analysis of this chapter is organized as follows:

Section I.	Analysis of the National Potential for Expansion of Employer Utilization of Undergraduate Co-op Student Manpower
Section II.	Analysis of the National Potential for Expansion of Student Participation in Co-op
Section III.	Analysis of the National Potential for Expansion of Co-op in Institutions of Higher Education

I. ANALYSIS OF THE NATIONAL POTENTIAL FOR EXPANSION OF CO-OP IN TERMS OF EMPLOYER UTILIZATION OF UNDERGRADUATE CO-OP STUDENT MANPOWER

This section of the analysis concentrates on the employers' utilization of co-op student manpower. The frame of reference is the undergraduate co-op student and the extent to which he/she is utilized by employers as a source of manpower, since this could exert a limiting influence on the national potential for expansion of cooperative education. In order to assess this potential, employers who currently hire undergraduate co-op students were asked about their intentions to increase their utilization of co-op student manpower by increasing employment. Also, employers who do not currently utilize undergraduate co-op students were surveyed to determine whether they intend to utilize co-op student manpower in the future.

A. Indicators of Increased Employer Utilization of Undergraduate Co-op Student Manpower

There are two primary sets of indicators of activity in the co-op student manpower market. The first is the degree to which employers currently utilizing undergraduate co-op student manpower express a willingness to expand their participation in co-op by hiring greater numbers of co-op students, and the second is the extent to which employers not currently participating in co-op express a willingness to hire undergraduate co-op students in the future. Also, the job placement responsibilities of co-op directors were assessed in order to provide an indication of the institutions' involvement and role in fostering employer utilization of co-op student manpower.

1. Level of Employer Utilization of Undergraduate Co-op Student Manpower

Faculty members participating in co-op were surveyed to determine how many employers they had contacted during the 1974-75 and 1975-76 school terms regarding participation in their respective co-op programs, and of these the number who agreed to participate. These data were also combined to generate acceptance rates for new employers contacted in the two school terms.

The proportion of employers contacted who expressed their willingness to initiate participation in co-op remained at about 44 percent in both the 1974-75 and the 1975-76 school years. It was observed that in the relatively new co-op programs the new employers contacted accepted the offer to participate at a rate in excess of 60 percent, while older co-op programs found less than 38 percent of the employers expressing a willingness to participate in co-op during the 1974-75 school term. A comparable difference, although not statistically significant, also persisted in the 1975-76 school year.

Although not statistically significant, there were differences in acceptance rates between categories of programs in terms of some of the other characteristics which are worth noting. During both time periods, the rates of agreeing to participate among institutions located in States experiencing high levels of unemployment were slightly higher than those for institutions in low unemployment areas. Thus it would seem that an inability to recruit new employers in areas of high unemployment has not been a factor hampering employer utilization of co-op student manpower.

A comparison of the average number of new employers contacted who agree to participate with growth in co-op student enrollment provides no indication that the employer utilization of co-op student manpower is a hinderance to the future growth and development of co-op. The overall median growth in co-op student enrollment during the years under study was about 25 students. Since our data indicate that the typical first year employer hires 2-1/2 students, then the 8-10 new employers enlisted on the average would indicate an increase, from this source alone, of about 20 to 25 new co-op work experience slots each year. Since in most co-op programs not all students are out on co-op jobs simultaneously, then this growth alone is definitely ample to allow for continued growth in co-op student enrollment of the present rate. In addition, co-op employers also hire increasing numbers of students as the length of time they have participated increases. In the second through fifth years of association with a co-op program, the

average employer has increased the extent of participation to five students. Thus it seems clear that the employer utilization of co-op student manpower is sufficiently robust as to allow for even an accelerated rate of growth of cooperative education.

2. Employers' Plans for Future Participation in Co-op

Both employers currently employing co-op students and those not currently participating in co-op were surveyed to determine to what extent they planned to participate in co-op in the future.

Among the employers currently employing undergraduate co-op students, 41.4 percent stated that they had plans to expand the number of co-op positions within their firms in the next year.

To determine whether co-op employers' plans to expand the number of co-op positions offered is a function of the nature of the firm, its environment, or the type of school with which it is associated, response frequencies were compared by firm size, type of product which it produces, its unionization status, the unemployment level in the State where the firm is located, and whether it accepts co-op students from a 2-year or a 4-year institution. These analyses reveal only one statistically significant difference. Employers accepting co-op students from 2-year institutions expressed plans for expansion of the number of co-op positions available more often than did those employing co-op students from 4-year schools. This implies that in general there is not any strong tendency for certain types of employers to be more likely to expand their utilization of co-op student manpower than others.

In order to further assess the extent of potential co-op expansion, employers who planned to expand the number of co-op placement positions made available by them were asked about the number of additional positions they planned to provide. Among the 41.4 percent of the employers currently employing co-op students who plan to expand the number of co-op placement positions made available by them, the average planned increase in the number of avail-

able co-op positions is 3.9. This would represent a 57 percent increase over the 6.8 positions currently provided by employers planning to expand.

Among firms planning to expand, those employing larger numbers of persons, those operating in the private sector, those which are not unionized, and those located in States experiencing low levels of unemployment appear to be planning an expansion involving a slightly larger number of new co-op placement positions than their counterparts. However the small magnitude and lack of statistical significance in these differences does not allow for any conclusions that certain types of employers, who are planning an expansion, are likely to increase the number of available slots to a greater extent than others. While larger firms do currently employ more co-op students than smaller firms, the differences are nowhere near proportional to the number of regular employees.

Employers not currently utilizing undergraduate co-op student manpower were surveyed concerning whether or not they would consider hiring co-op students within the next year or two. Fifty employers, representing 62 percent of those sampled, stated that they would. As shown in Exhibit 5.1, the reasons cited by employers expressing a willingness to participate in co-op in the future for past reluctance to participate closely resemble those cited by those employers who are unwilling to participate in co-op in the future. In both cases a lack of suitable job openings for co-op students is the most frequently cited reason for failure to participate in co-op. When compared by a t-test of proportions, it was observed that a lack of suitable job openings for co-op students was cited significantly more frequently by those unwilling to hire co-op students in the future than those expressing a future willingness to do so.

The other reason cited frequently by both those employers willing to hire co-op students in the future and those unwilling to do so is that costs would not make participation worthwhile.

EXHIBIT 5.1: REASONS CITED BY EMPLOYERS FOR FAILURE TO PARTICIPATE IN CO-OP

	By Those Expressing a Future Willingness to Hire Co-op Students		By Those Unwilling to Hire Co-op Students in the Future	
Reason	Frequency	Percent**	Frequency	Percent
Inadequate Explanation or Knowledge of the Co-op Program	5	10.0	3	9.7
Do Not Have Suitable Job Openings for Co-op Students	20	40.0*	22	71.0
Adjustments to Normal Hiring Standards Would be Required	4	8.0	1	3.2
Costs Would Not Make Participation Worthwhile	9	18.0	8	25.8
Program Would Have Negative Effect on Morale of Other Employees	0	0	1	3.2
Students Attitudes Were Unsatisfactory	0	0	2	6.5
Have Had Unsatisfactory Experiences With Other Types of Similar Programs	6	12.0	3	9.7
Other Employees Reported Unsatisfactory Experiences	0	0	1	3.2

* Significant at the 95 percent confidence level

** Percents do not add to 100 since employers could give more than one reason

Although the difference was not statistically significant, employers who were unwilling to hire co-op students in the future cited the additional costs resulting from co-op participation as a reason for not participating more frequently than employers who expressed a future willingness to do so.

Employers who do not hire co-op students can also be separated into those who have hired co-op students in the past but have since discontinued the practice and those who have never hired co-op students. The reasons for not participating and the frequency with which they were cited by each of these groups of employers are presented below in Exhibit 5.2. The reasons most frequently cited by employers who have previously employed co-op students were the lack of suitable job openings for co-op students, that costs would not make participation worthwhile, current financial problems plaguing the firm, and that the length of co-op student employment was too short. On the other hand, having unsatisfactory experiences with co-op in the past was only infrequently cited as a reason for their discontinuing participation in co-op.

In order to determine if the reasons cited for failure to participate in co-op were related to the nature of the firm, response frequencies for the various reasons were computed and compared by the background characteristics of firms and the unemployment level in the State where the firm is located with the aid of chi-square tests. Only one statistically significant relationship was observed. Larger firms stated more frequently than smaller firms that costs would not make co-op participation worthwhile. This implies that the costs attributed to co-op participation act as a stronger disincentive for co-op participation by larger firms than for participation by smaller firms. This perception is somewhat in accord with the actual experiences of co-op employers. As shown in Chapter 4, larger firms hiring co-op students were significantly less likely to enjoy wage savings by employing co-op students instead of regular employees. However,

EXHIBIT 5.2: REASONS CITED BY EMPLOYERS FOR NOT PARTICIPATING IN CO-OP

	Employers Who Participated in Co-op at a Previous Point in Time		Employers Who Have Not Previously Participated in Co-op	
Reason	Frequency	Percent	Frequency	Percent
Inadequate Explanation or Knowledge of the Program	1	2.2	7	20.0
Do Not Have Suitable Job Openings for Co-op Students	16	34.8	17	48.6
Adjustments to Normal Hiring Standards Would be Required	0	0	3	8.6
Costs Would Not Make Participation Worthwhile	9	19.6	7	20.0
Program Would Have Negative Effect on Morale of Other Employees	2	4.3	0	0
Students Attitudes Were Unsatisfactory	1	2.2	1	2.9
Have Had Unsatisfactory Experiences With Other Similar Types of Programs	4	8.7	4	11.4
Other Employers Reported Unsatisfactory Experiences	1	2.2	0	0
Current Financial Problems	6	19.4	3	8.6
Length of Co-op Student Employment is Too Short	4	12.9	0	0

*Percents do not add to 100

as also reported in this chapter, savings in wages and benefits for the larger firms do accrue with the use of co-op employees and in addition, the larger firms benefit far more from using co-op as a recruiting mechanism for acquiring permanent employers.

The reasons for lack of participation cited most frequently by employers who have never participated in co-op were primarily the lack of suitable job openings for co-op students, an inadequate explanation or knowledge of the co-op program, and that costs would not make participation worthwhile. To a much lesser degree, having had unsatisfactory experiences with other types of similar programs, current financial problems plaguing the firm, and the necessity for adjustments to normal hiring standards were also mentioned. These reasons for failure to participate in co-op resemble those cited by employers who had previously participated in co-op. However, there are some noteworthy differences. Inadequate knowledge of co-op programs was more frequently cited by employers who had not previously participated in co-op, while employers who had terminated previous participation almost never cited this reason. This implies that the reluctance to participate among employers who have not previously participated in co-op may in part be due to lack of information on co-op's true costs and benefits.

The reasons cited by employers for failing to participate in co-op were compared by the background characteristics of firms and the level of unemployment in the State where the firm is located with the aid of chi-square tests to determine if the responses are related to these characteristics. This analysis revealed two statistically significant relationships:

- Establishments and agencies operating in the public sector cited the necessity for adjustments to normal hiring standards as a reason for not participating in co-op more frequently than did employers operating in the private sector. This may be due, in the case of public sector employers, to legal restrictions or less flexible civil service procedures.

- Larger firms cited having had unsatisfactory experiences with other types of similar programs more frequently than did smaller firms as a reason for failure to participate in co-op. The most frequently cited difficulties experienced in the past included scheduling problems with students, costly training activities, and the lack of necessary skills on the part of students.

Although these two reasons for failure to participate in co-op appear to be real and not perceived and exhibit relationships to firm type and firm size, respectively, they are, overall, not very frequently cited as a reason for not participating in co-op.

Both employers who have previously participated in co-op, but have since terminated their participation, and employers who have not previously participated in co-op cite the inability to establish a co-op work experience which will be beneficial to both the student and the employer and also, but less frequently, the high cost of co-op participation as the primary reasons for their failure to participate in co-op. In addition, the inadequate knowledge about co-op was frequently cited by employers who have not previously participated in co-op as a reason for their lack of co-op participation.

The three predominant reasons for lack of co-op participation by non-co-op employers do not seem to present significant obstacles to co-op expansion. They are the inadequate knowledge possessed by employers concerning the nature of co-op programs, the perception of an increased financial burden being imposed on the firm as a result of participation in co-op, and the inability of firms to feel they can develop, on their own, co-op work experiences which will be beneficial to both the employer and the co-op student. As the cost-benefit chapter of this report has shown, employers of co-op students are generally reaping a large increase in benefits for a relatively small amount of cost by their participation. Thus, the reasons shown in this chapter to underly most of the unwillingness of employers to participate in co-op generally stem from perceptions rather than fact. Thus, with increased effort devoted to dissemination of information

regarding the benefits to employers resulting from participation in co-op, the employer utilization of co-op student manpower does not appear to be a limiting factor to the potential for expansion of cooperative education.

3. Magnitude of the Co-op Director's Role in Job Placement

The job placement responsibility of each program's co-op director was surveyed in terms of hours devoted per week to this activity. Co-op directors devoted, on the average, 5.28 hours per week to job placement activities.

In order to determine if co-op directors in certain types of institutions experiencing differing levels of unemployment devoted different amounts of time to job placement activities, means were calculated and compared with the aid of F-tests by institutional background characteristics and by the level of unemployment where the institution is located. However, the comparisons revealed no statistically significant differences in the average amounts of time devoted to job placement by co-op directors, contrary to the expectation that co-op directors of programs in institutions in States experiencing high levels of unemployment will have to devote more time to job placement than those in institutions located in States exhibiting low levels of unemployment. This finding corresponds with the earlier discussed one that there was no difference in the number of new employers contacted who agreed to participate in States experiencing high levels of unemployment as compared to those with low levels of unemployment. The implication is that even in States experiencing high levels of unemployment the employers' utilization of co-op student manpower is not a problem, and the potential for co-op expansion is still very great.

4. Summary

Although the rate of agreeing to participate among employers contacted was relatively equal for both the 1974-75 and the 1975-76 school terms, the increase in the number of employers hiring

co-op students appears to allow for continued and possibly accelerated growth of employer utilization of co-op student manpower. A large proportion (41%) of employers currently hiring co-op students indicated plans for expanding their future participation in co-op. Also, a large proportion (62%) of employers not currently employing co-op students indicated that they may hire co-op students in the near future. Each of these indicators reflects the potential for future increases in employer utilization of co-op student manpower, which will aid in the future expansion of co-op.

Additionally, it would appear that greater dissemination of information about co-op along with more active marketing by schools among both non-participating firms and the larger firms currently participating could result in greatly increased employer utilization of co-op student manpower.

Also since expansion of employer utilization of students seems to be accomplished more easily in newer programs and appears to be keeping pace with the rapid growth in student enrollment, this, combined with the findings of Chapter 6 showing IV-D to be highly effective in starting new programs, would imply that continuing the Federal role as a starting mechanism for new programs would be the most effective means of increasing the potential for growth of cooperative education.

B Potential Factors Influencing Co-op to Expand

The analysis of the factors influencing expansion in the level of employer utilization of co-op student manpower is based on both employer and student behaviors. Both employers currently hiring co-op students and those who do not were surveyed to identify incentives which could be utilized to promote their participation in co-op. Also, the relative productivity of co-op student employees as compared to regular employees was assessed. The trade-off between co-op students and regular employees may exert a strong influence on the extent to which employers utilize co-op

student manpower. Each of the above indicators was analyzed and the results are discussed in the following sections.

1. Substitutability of Co-op Student Employees for Regular Employees

As discussed in Chapter 4, employers who hire co-op students cite several reasons for their participation in co-op. Among the most important reasons cited for their participation in co-op are finding potential permanent employees, improved communication with schools who are now more responsive to business needs, and improved public relations through enhanced visibility in the community. Employers also rate co-op employees higher than regular employees doing the same kind of work in terms of skill and ideal employee characteristics. This implies that the utilization of co-op student manpower is viewed by many employers as a feasible alternative to hiring regular employees.

In order to evaluate the productivity of co-op employees relative to regular employees, employer responses comparing co-op and regular employees in terms of each of the eight skills listed in Exhibit 5.3 were utilized. In each category, co-op student/employees were rated by employers as being as good as and often better than regular employees. This implies that co-op student/employees can be substituted for regular employees with no decrease in productivity resulting. If this information is widely publicized among employers, it may likely result in a growth in employer utilization of co-op student manpower.

Additional evidence concerning the productivity of co-op employees as compared to regular employees can be gained by examining employers' responses concerning how rapidly undergraduate co-op students improve their productivity in comparison with regular employees holding similar jobs. It was observed that over 57 percent of the employers surveyed felt that co-op students improve more rapidly than regular employees, while less than 10 percent of the employers felt that regular employees progress faster.

EXHIBIT 5.3: RELATIVE COMPARISON OF UNDERGRADUATE CO-OP STUDENT/ EMPLOYEES WITH AVERAGE REGULAR EMPLOYEES

Attribute	Percentage of Co-op Employers Rating Co-op Student/Employees as: Somewhat or Much Better	No Different	Somewhat or Much Worse
Technical Knowledge	46.9	25.8	27.3
Communications Skills	48.1	37.1	14.8
Quality of Work	45.7	37.6	16.7
Quantity of Work	36.2	42.2	21.6
Cooperation, Ability to Work with People	52.6	44.5	2.8
Dependability	46.2	48.1	5.7
Ability to Follow Instructions	50.9	42.9	6.1
Motivation	67.8	28.0	4.3

This relationship is generally found among all types of firms. Since co-op student/employees are often in lower level jobs where they compete with workers who are less educated and less motivated, they are able to progress faster. The implication is that co-op students can generally be substituted for regular employees without sacrificing worker productivity. This ease of substitution will likely promote employer utilization of co-op student manpower. However, it may also imply that as students are used more as regular production workers rather than as trainees, the educational benefits to the student may decrease and resistance to co-op from regular workers and organized labor may increase, especially in high unemployment localities.

The final indicator from which evidence on the degree of substitution between co-op and regular employees was obtained is by an analysis of the respective hiring rates of co-op and regular applicants for employment; i.e., the percentage of job applicants who are actually hired. These rates, for the overall sample and by the background characteristics of the firms surveyed indicate that the proportion of co-op applicants who are accepted for employment is generally much higher than the proportion of regular

applicants who are accepted for employment. The higher rates for co-op student applicants are due to the fact that co-op students are short-timers who are prescreened and presold prior to their applying for a co-op position. Comparisons between co-op and regular job applicants and, within each applicant type, by the background characteristics of firms which indicated statistically significant differences are discussed below:

- The overall proportion of co-op applicants accepted for employment of 47 percent was significantly greater than the acceptance rate for regular applicants, which was approximately 15 percent. The higher proportion of co-op applicants who are accepted can be attributed to the screening process which co-op students go through during the employment process. This process carefully selects students for available openings, and then only a small number of candidates are referred to each opening. This results in the higher acceptance rate for co-op students as compared to regular applicants, who flock to employers in much greater numbers.
- Although not always statistically significant, the pattern of higher employer acceptance rates for co-op job applicants than regular job applicants is consistent for every employer background characteristic. This also is likely due to the sophisticated screening process to which co-op job applicants are subjected.
- The acceptance rate for co-op applicants was significantly higher among nonunionized firms as compared to unionized firms. Although it has been learned that in very few cases are co-op employees required to join a union, the subtle pressures exerted by the union on hiring practices may account for this difference in acceptance rates.
- The acceptance rate for co-op applicants was significantly greater among firms cooperating with 2-year co-op programs as compared to those firms cooperating with 4-year co-op programs. Since there is no statistically significant difference in the average number of co-op applicants for positions with firms cooperating with 2-year co-op programs when compared with the number applying for such positions with firms cooperating with 4-year co-op programs, this implies that employers may utilize co-op student manpower from 2-year schools to a greater extent than that from 4-year schools. To a great extent this is a function of the type of job rather than the level of school. Hiring rates were significantly higher for white collar jobs other than professional and for service workers, both of which are much more common among students in co-op programs at 2-year schools.

2. Factors Promoting Employer Utilization of Co-op Student Manpower

Both employers who do and those who do not currently employ co-op students were asked to rate various incentives for increasing or initiating co-op participation, respectively.

A review of the findings indicates two incentives more important than the others, both for employers currently hiring co-op students and those who do not currently hire them. Employers who currently hire co-op students assigned high levels of importance to employer reimbursement for co-op student training and providing direct wage subsidies for co-op students as incentives to promote increased employer utilization of co-op student manpower. These findings imply that such incentives would result in a potentially large increase in employer utilization of co-op student manpower.

Although these incentives are generally assigned equally high levels of importance when compared by the background characteristics of firms and whether a firm plans to expand the number of co-op positions available, it was observed that firms operating in the public sector view wage subsidies to the co-op student as less important than do firms operating in the private sector.

Employers not currently employing co-op students also assigned greater importance to employer reimbursement for co-op student training and providing direct wage subsidies for co-op students in terms of stimulating their participation in co-op in the future. These incentives, which effectively reduce the wages of co-op/student employees, will likely have a positive impact on co-op participation by employers who do not currently hire co-op students.

A comparison among types of firms revealed only one statistically significant relationship. Providing a direct wage subsidy for the co-op student was viewed as a more important incentive for co-op participation among smaller firms than among larger firms. While this implies that a direct wage subsidy provided to the student would result in a relatively larger increase in the number

of smaller firms utilizing co-op student manpower, it may be that a less expensive program of information dissemination would be close in effectiveness since our cost-benefit data have shown that smaller firms are in fact more likely to enjoy wage savings benefits by hiring co-op students.

Although the reimbursement of employers for co-op student training and providing a direct wage subsidy to co-op students may result in increased employer utilization of co-op student manpower, it may be only short-lived. Subsidies such as these often create a growth that is only temporary, and the results may fade once the subsidies are discontinued.

It is also interesting to note that public recognition is rated as at least somewhat important by almost as many employers as are the two subsidies. This, in conjunction with the positive findings presented in the employer cost-benefit analysis section of this report, would imply that relatively inexpensive and easily undertaken incentives, such as this, may be sufficient to provide for any needed expansion of employer utilization of co-op student manpower.

II ANALYSIS OF THE NATIONAL POTENTIAL FOR EXPANSION OF STUDENT PARTICIPATION IN CO-OP

In assessing the demand for the number of co-op positions currently available in co-op educational institutions, one approach is to focus on the decisions by individual students between co-op and non-co-op programs. The student's choice to participate or not to participate in co-op within the institution will be the emphasis in this section.

In the first part, co-op student characteristics will be distinguished from non-co-op student charateristics. By determining the factors which will differentiate between students who choose to participate in co-op and those who do not with a reasonable degree of success, it might be possible to determine the number and type of students who are most likely to enroll in programs of cooperative education. This measure could serve as an indicator of the extent to which co-op educational services are likely to be utilized. In the second part, the reasons why students currently participating in co-op have made that choice are explored. Finally, in the third section, the reasons of non-co-op students for not participating are investigated.

A. Analysis of Student Choice Between Co-op and Non-Co-op Participation

Given the dichotomous nature of the dependent variable, co-op versus non-co-op status of the student, an appropriate statistical technique to apply in this instance is discriminant analysis. By utilizing discriminant analysis, the characteristics must be determined which are capable of distinguishing between actual co-op and non-co-op students with the greatest degree of accuracy. If these characteristics can be identified, they will serve as a basis for identifying the types of students who are potentially most likely to enroll in co-op educational programs. This knowledge will subsequently enhance the ability to predict the level to which co-op educational services are likely to be utilized, given the number of potential students exhibiting such characteristics.

Use of this technique was not overly successful. What it was able to do was to either support or refute a series of hypotheses which had been generated to predict co-op participation. The results of this activity are shown in Exhibit 5.4.

However, what the technique was not able to do was to predict group membership, based on the above findings, with any degree of accuracy. This implies either one of two things:

- That the wrong hypotheses were generated regarding co-op group membership and that there are other characteristics which can predict whether or not a student will opt to join a co-op program; or
- That there are few significant differences between co-op and non-co-op students and that the great majority of undergraduates are potential candidates for co-op.

B. Reasons Cited by Co-op Students for Participating in Co-op

Measures of the impact of alternative motivations for a co-op student to participate in co-op can be determined by the importance co-op students assign to various reasons for participation. These have been discussed earlier in this report. Three reasons were cited as being most important in a student's choice to enter co-op. The reasons were: to acquire skills and experience related to career objectives, to make the educational experience more rewarding, and because they felt it would make it easier to get employment after graduation. Each of these reasons focuses on the student's career objectives. Based on these findings, it appears that part of the demand for co-op educational services is a function of the amount of career relevance students associate with a given co-op program.

While most students attach great importance to the acquisition of career-relevant skills and experience, two other important reasons, which show differential impact on different types of students, are the financial incentives and the improved employability of the students subsequent to graduation. Students

EXHIBIT 5.4: RESULTS OF STUDENT PARTICIPATION DISCRIMINANT ANALYSIS

Variable	Hypothesis	Result
Parental Support	The greater the amount of parental support received by a given student, the less likely he is to participate in co-op.	Confirmed
Race	Minority students are more likely to participate in co-op than are white students.	Confirmed
Tuititon Assistance	Students who receive greater amounts of tuition assistance are less likely to participate in co-op than those who receive lesser amounts of or no tuition assistance.	Confirmed
Sex	Female students are less likely to participate in co-op than are male students.	Confirmed
Marital Status	Married students are more likely to participate in co-op than unmarried students.	Confirmed
Veteran Status	Students who are veterans are more likely to be participants in co-op than students who have not served in the military.	Confirmed
Number of Children	The greater the number of children in a family headed by a given student, the more likely that the student is to be a participant in co-op.	Outcome contrary to expected relationship: students with greater numbers of children were actually less likely to participate in co-op.
G.I. Bill	The greater the amount of support which a student receives from the G.I. Bill, the less likely he is to be a participant in co-op.	Outcome contrary to expected relationship: students receive more support from the G.I. Bill were actually more likely to participate in co-op.

who typically have greater financial need and/or responsibilities cite the financial benefits accruing from co-op as a strong incentive for co-op participation. Also, students who are frequently in a disadvantageous position with respect to employment subsequent to graduation utilize co-op as a means for improving their employability after graduation. Therefore, it appears that financial considerations and the desire to improve employability after graduation are, in addition to the career development motivation, also influential factors in determining student demand for co-op educational services.

C. Non-Co-op Students' Reasons for not Participating in Co-op

Reasons for non-co-op students not to have participated in co-op were investigated as potential obstacles to co-op expansion. The two most frequent reasons given by the respondents for not participating in co-op were not knowing about co-op program (26%) and lack of interest in cooperative education (23%).

The other two reasons cited by students for not participating in co-op were loss of other financial aid due to participation and the lack of a co-op program in students' majors.

Since one of the thrusts of the IV-D program has been to increase participation among disadvantaged and minority populations (close to being one-and-the-same in this study), serious consideration should be given to waiving the inclusion of co-op earnings when computing a students' financial status in order to determine the amount of grants-in-aid for which he/she is eligible. While this is done in calculating BEOGS grants, we are unaware of how other programs presently treat these earnings. If such incentives do exist (and the responses on this study indicate that either they do, or that students think they do), their removal could considerably enhance the growth of co-op among these target populations as well as among the general undergraduate population.

Lack of a program in a student's major is a problem which can be alleviated by promoting the further expansion of co-op

within institutions presently offering co-op, and within institutions which presently are not supporting a co-op program. As reported elsewhere, the IV-D legislation has been particularly effective in promoting the growth of co-op in nontraditional areas.

Each of the above reasons for non-co-op students not participating in co-op, which serves as potential obstacles to the growth of co-op, can be limited or eradicated by the following courses of action.

- increasing student awareness of existence of and benefits from co-op programs;
- expanding of co-op to previously untapped discipline areas; and
- removing barriers to others forms of financial aid for participating in co-op.

The successful expansion of co-op is a function of the extent to which the previously cited courses of action are pursued. The most important factor for increasing student participation, just as it is in the case of employers, is primarily increased dissemination of information about co-op, which can be easily accomplished with little cost.

III. ANALYSIS OF THE NATIONAL POTENTIAL FOR EXPANSION OF CO-OP IN INSTITUTIONS OF HIGHER EDUCATION

A. Indicators of Commitment to Co-op Growth and Development

The broad issue to be addressed here is the potential for growth and development of cooperative education in institutions of higher education. This part of the analysis will investigate attitudinal responses regarding institutional expansion and other indicators of the development of co-op. Indicators of co-op expansion will be examined in terms of institutional characteristics in an effort to determine where the strongest and weakest potentials for expansion of co-op exist.

1. Institutional Plans for Co-op Expansion

The senior academic officials of the samples' co-op schools were asked whether or not there were plans for expanding cooperative education at their respective institutions, and 76.6 percent said yes. The large number of institutions which indicate plans for expansion of cooperative education leads one to inquire whether or not the small proportion who do not have plans for expansion are more frequently found in one type of institution than another. After a comparison of plans for expansion by institutional characteristics such as 2-year versus 4-year, high versus low unemployment, public versus private control, and those which receive IV-D funding versus those which do not, only one sizeable difference was observed: 34 percent of those institutions in high unemployment areas did not have plans for expansion while only 12 percent of the institutions in low unemployment areas had no expansion plans.

The above relationship is worth noting even though it is not statistically significant at the 95 percent confidence level. It implies that institutions in low unemployment areas may be more likely to expand their co-op programs than those in areas of high unemployment even though the evidence reported elsewhere shows that institutions in high unemployment areas do not seem to have more difficulty in placing co-op students than those in areas exhibiting low levels of unemployment.

Although a majority of all types of the schools surveyed indicated that they had plans for co-op expansion, it is also important to note the form which that expansion is expected to take. Exhibit 5.5 below indicates the most frequently-cited types of planned expansion.

EXHIBIT 5.5: FREQUENTLY CITED TYPES OF CO-OP PLANNED EXPANSION

Type	Frequency	Percent
Increased Enrollment	19	38.8%
Increased Staff	10	20.4
Add New Curriculum	6	12.2
Integration of Co-op in all Feasible Academic Programs	2	4.1

The most frequent types of planned expansion, accounting for over 75 percent of the responses given, were to increase enrollment, increase staff, and add new curriculum or expand co-op to additional academic programs. Each of these types of expansion is essential to the comprehensive growth of co-op educational services. Comparisons of the various forms of planned expansion which were cited were made by the various institutional characteristics, but no significant differences were found.

2. Number of Co-op Students Anticipated in Future Years

Co-op directors were asked to indicate what the expected co-op enrollment for their institutions would be one year, three years, and five years in the future. These projected enrollment figures were divided by current enrollments to arrive at measures of the relative expected increases in enrollment with respect to current enrollment levels. These measures, although somewhat subjective, provide a quantitative measure of projected future enrollment levels.

Although there are no significant differences in the projected enrollment levels when they are compared by institutional characteristics, one can gain insight into the magnitude of the increase in co-op enrollment by comparing the projected increases with the observed growth of co-op enrollment over recent years. The following Exhibit 5.6 may represent the best picture of co-op growth and growth potential. This exhibit presents mean percentage changes in co-op enrollment with the outliers removed. This enables not only more likely growth predictions, but also allows for statistical tests of differences in growth by type of institution not affected by the few small programs with overly high percentage increases in enrollment. In this exhibit, we see that the only significant differences are between new and old programs. As would be expected, new programs have grown and anticipate continuing to grow at a faster rate than older programs (those initiated prior to 1973).

We found the actual and anticipated increases to represent relatively small changes in terms of the absolute number of students involved. The average increase over the past two years reflects an additional 92 students per IHE (with a median of 52). Also, the expected mean growth in the next five years is about 252 students with a median of approximately 142 expected additional students.

If these anticipated growth rates are reasonable, we could make the following projections about the national potential for enpansion of enrollment in cooperative education. Since the expected growth of 252 students per program by 1980 corresponds very closely to the actual two-year growth from 1973-74 to 1975-76 of 92 students, we feel these projections will not be unrealistic. In making these projections, we have also drawn on data concerning the number of co-op programs nationwide collected by the Cooperative Education Research Center at Northeastern University.[1/]

1/ Brown, Sylvia J. and Wilson, James W. "Survey of Cooperative Education, 1976, "Journal of Cooperative Education, XIII, November 1976, 57-65.

EXHIBIT 5.6: PROPORTIONAL CHANGES IN CO-OP ENROLLMENT
(with outliers removed)

Characteristic	Past: 1973-74 to 1974-75	Past: 1973-74 to 1975-76	Future Projections: 1975-76 to 1976-77	Future Projections: 1975-76 to 1978-79	Future Projections: 1975-76 to 1980-81
	Time Period				
Type of Institution:					
2-Year	91.8%	127.7%	9.0%	70.8%	127.4%
4-Year	75.0%	136.1%	13.2%	97.0%	241.9%
IV-D Funding:					
Yes	102.7%	160.8%	12.0%	94.6%	209.1%
No	29.6%	54.5%	8.6%	54.6%	122.6%
Unemployment:					
High	109.9%	152.8%	12.0%	87.7%	176.4%
Low	54.2%	111.6%	10.2%	80.1%	196.7%
Program Age:					
Old	51.2%	93.7%	10.6%	50.8%	108.8%
New	211.4%*	275.9%*	12.2%	143.1%	324.7%
Overall Change:	82.6%	132.2%	11.1%	84.1%	185.7%

*Statistically significant at 95 percent level of conficence

5.26

On an overall basis and if no new co-op programs were started, then we could expect an average program to grow from 378 (the average present size in our sample) to 630 students. Using the Northeastern estimate of 1,017 co-op programs currently in existence, then in 1980 these would be just over 640,000 students enrolled in programs of cooperation education throughout the United States. While the Northeastern study shows the growth in the number of new programs to be declining significantly, it is not clear that their hypothesis that the number of programs may stabilize at about the current 1,000 is correct. If instead new program development continued at the most recent year's pace of 6 percent, then we could expect nearly 1,300 co-op programs nationally in 1980. Since IV-D has been highly effective in encouraging the growth of new programs, and since it would appear that under the new legislation the Federal effects should be at least as effective, then continued growth in the number of new programs would seem to be a reasonable assumption. This would not only represent an additional 30,000 students in 1980 (given the average size of a new program to be about 100 as shown by our data), but would also represent an even greater potential increase in enrollment as they continued on the typically rapid growth path of most newer programs. Nevertheless, this would still represent less than 10 percent of the approximately 10 million students enrolled in institutions of higher education. Thus, even if college enrollments overall decreased sharply, co-op in institutions of higher education is far from a saturation point.

5. Capacity to Absorb More Co-op Students Given Present Staff and Resources Allocated to Co-op

Co-op directors were asked how many additional students they could have or anticipate being able to accommodate over and above past or projected enrollment levels. These measures provide an indication of the capacity for co-op to expand, given the present size of co-op staff resources.

There was only one case in which there was a significant difference in excess capacity in terms of institutional

characteristics, with private schools having more excess capacity than private institutions. Summary results are presented for different years in Exhibit 5.7 below.

EXHIBIT 5.7: CAPACITY TO ABSORB ADDITIONAL CO-OP STUDENTS

Year	Additional Co-op Students	
	Mean Number	% of Current Enrollment
1974-75	52.8	56.2% (61)
1975-76	79.3	80.6 (68)
1976-77 (anticipated)	84.4	54.8 (77)

Thus, it appears that by providing students with more information on the benefits of co-op and by possibly providing co-op offerings in new areas, institutions could substantially increase their co-op enrollments without straining their programs' capacities. Given the relatively low cost of these activities and the cost-saving accruing to larger programs, such dissemination activities should be strongly encouraged.

B. Potential Factors Influencing Co-op to Expand

An integral component of the analysis of co-op expansion is a review of the potential factors which might influence co-op to expand.

1. Incentives Which Would Influence Schools to Expand Co-op

Almost all (95%) of the senior academic officials sampled from institutions offering co-op indicated a desire to increase the number of co-op slots in their respective institutions. The responses of these officials were cross-tabulated by institutional characteristics. However, no significant differences in the desire for expansion of the number of co-op positions was detected in any of the comparisons by institutional characteristics. *Obviously, one cannot single out any types of*

institutions where expansion of the number of co-op slots is not desired when only three schools in the entire sample do not express any interest in increasing the number of co-op slots at the institution.

Those administrators who expressed an interest in increasing the number of co-op slots at their institutions were asked in an open-ended question to provide their motives for such an increase. The most frequently offered reasons for increasing the number of co-op slots are presented in Exhibit 5.8 below.

EXHIBIT 5.8: MOST FREQUENTLY-CITED REASONS FOR INCREASING THE NUMBER OF CO-OP SLOTS AT INSTITUTIONS

Reason	Frequency
Better Student Preparation	14 (28.8%)
Opportunity for the Student to Learn About Specific Occupations	8 (13.1%)
Primarily Interested in the Students Rather than the Slots	8 (13.1%)
Further Goals of Career Education	6 (9.4%)
Philosophical Support of the Program	5 (8.3@)

The five reasons for expanding an institution's number of co-op positions, which are listed in the Exhibit 5.8 above, account for over 65 percent of those given by the senior academic officials surveyed. Two themes are apparent throughout all of the reasons given, one related to the student and the other to the co-op program. The most frequently cited reason for expansion was to improve students' knowledge of the labor market and specific occupations. The other primary reason was because of a commitment to the nature, and goals, of the program. Both of these rationales for increasing the number of co-op positions are closely interwined. While one is student-oriented and the other is program-oriented, they both join in a common goal of better student preparation through a more diverse, career-oriented educational experience.

Given this strong interest in expanding co-op, it is therefore important to investigate what are the most important incentives to the expansion of co-op.

The most frequently-expressed stimulus for co-op expansion was various unspecified forms of financial support for co-op, which was stated in over 35 percent of the cases. This indicates that there generally is a desire for additional financial support in order to expand co-op programs. However, much of the other data presented in this report indicates that the potential for expansion is great and that such incentives, even though desired, may not be required for the continued development of co-op. Since there were no significant differences in the frequencies with which the various incentives were given in terms of institutional characteristics, one must conclude that these incentives to co-op expansion are no more important at any particular type of institutions.

2. Federal Government Incentives Which Would Influence Schools to Introduce or Expand Co-op

Some of the most influential stimuli to co-op can be generated by the Federal government. In order to gauge the importance attached to different potential Federal incentives for the expansion of co-op, senior academic officials from the institutions in our sample, who had previously or were currently receiving IV-D funding, were asked to rate the importance attached by their institution to various ways in which the Federal government could influence them to increase their participation in cooperative education.

Of the potential Federal incentives provided for consideration, three were considered very important by at least 60 percent of those surveyed: an extension of the funding period for IV-D funds, an increase in maximum allowable grant, and the provision of wage subsidies to co-op students.[1/] *These*

1/ While the respondents were not asked to specify the exact nature of such a wage subsidy, we assume that what they intended was that some proportion of the wages currently paid by employers to students for their co-op work experience be subsidized by the Federal government as is done in the College Work-Study Program. Current legislation specifically precludes use of funds from cooperative education grants for this prupose (see Section 801(c) of Title VIII of the Higher Education Act, as amended by P.L. 94-482).

incentives, which were considered most important, focus on the financial considerations of co-op from both the schools' and the students' points of view. Even if not needed, the institutions' interest in both greater amounts of and a longer duration for the funding of co-op programs, has already been met by the new Federal legislation in support of cooperative education. A wage subsidy to employers of co-op students would relieve their financial burden and would probably increase the number of work slots available for students enrolled in a co-op program. This might be useful in those areas, such as liberal arts and health, where the cost-effectiveness of co-op is not assured. However, it might also jeopardize the growth of co-op by rendering it far more vulnerable to the vagueries of Federal policies and priorities.

In order to fully assess the potential impact of Federal incentives on the expansion of co-op, one must also examine the importance attached to these incentives by institutions which do not currently have co-op programs. The two incentives which were assigned the greatest importance by such institutions were providing wage and tuition subsidies to co-op students. Both of these incentives focus on developing a high level of student interest in co-op participation. These incentives would significantly decrease students' opportunity costs of participating in co-op. As in the case of co-op schools, the 4-year non-co-op institutions also assigned greater importance to providing tuition subsidies to co-op students than did the 2-year schools. Similarly, private institutions assigning greater importance to this incentive is no doubt due to the higher tuition in 4-year and private institutions. All of the other incentives were assigned relatively similar degrees of importance by the various types of institutions. This indicates that all types of institutions which do not currently have a co-op program would be equally influenced by most Federal incentives, with the incentives designed to increase student participation being more important in schools with higher tuition fees.

3. Expected Changes in Co-op Programs After IV-D Funding Has Ended

Co-op education directors were surveyed to determine what changes were expected as a result of the termination of IV-D funding. Only at three schools was it felt even possible that co-op would be dropped as a result of the termination, while 34 percent of the sample felt that it would be expanded, and about half (49%) felt it would continue at the same size. This obvious commitment to co-op was substantiated by the fact that 71 percent of the directors stated that institutional funds would be substituted for IV-D funds. Although it was felt that co-op was more likely to expand in 4-year schools than in 2-year schools, both revealed a high level of commitment to co-op with 81 percent of the 4-year institutions indicating that institutional funds would be substituted for IV-D funds and 60 percent of the 2-year schools indicating such a substitution of funds. These findings show a strong commitment to co-op and a strong belief in its continued expansion. Although IV-D funding is crucial to the introduction of co-op, its termination is not felt to be a barrier to the continued expansion of and commitment to co-op.

As a check on the forecasted changes resulting from the termination of IV-D funding, directors of co-op programs in the seven institutions where it had already been terminated were surveyed concerning the effects. In four schools, or 57 percent of these cases, the co-op program was expanded, and in the same percent institutional or other funds were substituted for IV-D funding, which has not had an adverse effect on the expansion of co-op, since in a high proportion of the sampled cases, co-op continued to expand. While the data do not indicate it was necessary, the extension of IV-D funding from three to five years may be useful in cases such as the two schools in this sample which had to cut back on staffing when IV-D funding ended.

4. Summary

The two primary concerns of institutions desiring to expand the number of co-op positions are the cultivation of more

work experience positions for co-op students and the availability of co-op funding. Although IV-D funding was observed to have an impact during the developing stages of a co-op program, it does not appear to be necessary for continued expansion or institutional commitment. In addition to the institutional financial considerations affecting co-op, incentives which would promote student participation are considered useful. These incentives can be viewed from either the institutional or the student perspective. Institutional officials view tuition and wage subsidies for students as among the more important incentives to co-op expansion. This would make co-op more appealing to students because of the reduced opportunity cost of their participation. From the student perspective, as discussed elsewhere in this report, improved employability after graduation and the financial aid aspect of co-op participation provide important incentives for many types of students; with elimination of barriers to receiving other types of aid being particularly important to disadvantaged students. However the cost-benefit results, presented in Chapter 2, indicate that subsidies are, in most cases, probably not necessary.

C. Factors Hampering Further Expansion of Co-op

The evaluation of factors hampering the expansion of co-op draws upon data reflecting the various points of view of the participants in co-op. Institutions provided insight into the factors which act as the greatest barriers to either implementing or maintaining co-op, and faculty members have provided insight into what role the institution and its faculty play in the expansion of co-op.

1. Reasons for Institutions not Having Co-op

The senior academic officials from the 16 institutions in the sample not currently having co-op were asked why their institutions did not have cooperative education. The most frequently cited reasons for schools not having co-op are presented in Exhibit 5.9.

EXHIBIT 5.9: MOST FREQUENTLY CITED REASONS FOR SCHOOLS NOT HAVING COOPERATIVE EDUCATION

Reason	Frequency	Percent
Acquisition of Funds	5	31.3
Traditionally a Liberal Arts College	5	31.3
Lack of Familiarity With the Program	2	12.5

As shown in the above exhibit, the most frequently cited reasons for an institution not having co-op focused on financial limitations, not being oriented to co-op, and a lack of familiarity with it. These accounted for 75 percent of the responses given. These constraints on an institution's ability to offer co-op were compared by institutional characteristics, but no significant differences were detected. If desired, the impact of these constraints can be diminished considerably. More funds can be made available to institutions not presently having programs; they can be made aware of the entire range of potential sources of financial support for co-op; and they can be provided with grant writing support. The degree to which this frequently cited constraint on the development of institutions' co-op programs is overcome will be reflected in the extent to which additional institutions are able to initiate new co-op programs in the future. Liberal arts institutions can be informed of the extent to which co-op can be integrated into their various discipline areas by making available to them information about ongoing programs in similar institution.

One can gain some insight into factors acting as potential obstacles to co-op expansion by reviewing the reasons cited by non-co-op faculty for not participating in co-op, other than teaching.

The most frequently cited reason for lack of faculty participation is that the faculty member had not been asked (34%). Co-op has generally not been promoted among faculty members who do not participate in co-op in a manner other than.

teaching. The second most frequently cited reasons are the fact that the co-op program is already adequately staffed (24%, and lack of time (23%). Although lack of the necessary skills to perform other co-op-related duties was occasionally cited, it does not appear to be a major factor. Thus, it does not appear that faculty resistance is acting as a barrier to expansion of co-op, since the reasons for non-participation are primarily related to lack of need or recruitment by the institution.

Other intra-institutional obstacles to the expansion of co-op can be identified by reviewing faculty members' assessments of the possible disadvantages of co-op to determine how favorably different aspects of co-op are viewed at different types of institutions and in different discipline areas. These views provide an indication of whether the faculty will exert a positive or a negative influence on the expansion of co-op.

The following statements and the implications of the faculty members' views concerning them are presented below:

- A high proportion, over 75 percent of the co-op faculty and almost 70 percent of the non-co-op faculty, indicated a belief that college education should be career-oriented. Co-op faculty in the business and management and health professions discipline areas felt this most strongly. The high proportion of both co-op and non-co-op faculty supporting the view that a college education should be career-oriented negates any barrier to the expansion of co-op which a negative viewpoint might indicate.

- High proportions of both the co-op and non-co-op faculty members surveyed felt that faculty should be directly involved in job placement activities. Over 75 percent of the co-op faculty members and over 62 percent of the non-co-op faculty members supported this view. However, both co-op and non-co-op faculty in the health professions discipline area stated more frequently than their counterparts in other discipline areas that faculty members should not be directly involved in job placement activities. This represents a potential

limiting factor to co-op expansion in the health professions discipline area. However, in general, faculty members felt that they should participate in job placement activities. This support of job placement activities provides a positive influence for co-op expansion.

- Almost 80 percent of co-op faculty members and nearly 70 percent of non-co-op faculty members surveyed stated that they felt the jobs which co-op students get after graduation are better than those which other students get. Although co-op faculty in 4-year institutions and non-co-op faculty in the engineering/architecture discipline area were more strongly in support of this view than their counterparts, it was generally supported by all faculty members. This view provides an indication of faculty support of co-op, and could provide an underlying stimulus for co-op expansion.

- Only a small percentage, less than 16 percent of the co-op faculty members and less than 7 percent of the non-co-op faculty members surveyed, stated that co-op does not allow them to teach full-time. The implication here is that the work requirement for faculty members as a result of their participation in co-op would not act as a barrier to co-op expansion.

- Over 95 percent of those surveyed in the case of both co-op and non-co-op faculty supported the view that students benefit from work experience related to their majors. This implies that co-op has a broad base of support among faculty members. Their support of this view provides an indirect indication of the high levels of support for co-op among faculty members in all types of institutions and discipline areas.

- A high proportion of both co-op and non-co-op faculty felt that it does not detract from a student's studies to be involved in alternate periods of full-time study and work. This view was supported by nearly 80 percent of the co-op faculty members and by almost 70 percent of the non-co-op faculty. Since this view did not differ in the degree of support provided by faculty in different types of institutions or different discipline areas, it is apparent that the alternating nature of certain formats for co-op does not act as a barrier to the expansion of co-op to additional institutions or discipline areas.

- Both co-op and non-co-op faculty supported the belief that it does not detract from a student's studies to be involved in parallel periods of full-time study and work. Although this view was supported by over 80 percent of the co-op faculty and by over 70 percent of the non-co-op faculty, it was supported more strongly by co-op faculty members in the trade and industrial discipline area than by those in other areas. This is to be expected because of the parallel format of co-op programs in the trade and industrial discipline area. In general, the parallel nature of some co-op programs does not represent an obstacle to institutional or discipline area expansion of co-op.

The factors affecting co-op discussed above indicate that faculty participation does not represent a significant barrier to co-op expansion. The feelings exhibited by faculty members about various aspects of co-op such as its structure, its career orientation, the job placement role of co-op faculty, and the impact of co-op participation on students indicate a strong support of co-op on both the institutional level and in different discipline areas.

2. Sources of Difficulty in Implementation and Maintenance of Co-op

Sources of difficulty in both implementing and maintaining a co-op program can be identified as potential obstacles to the further development of co-op. The following Exhibit 5.10 contrasts the degrees of difficulty which co-op directors in the sample associated with several activities involved in implementing and maintaining a co-op program.

As shown in the exhibit, the most frequent source of difficulty in the implementation of a co-op program is recruiting employers to participate in co-op, although even this was indicated as posing a great deal of difficulty by less than one-fourth of schools. The difficulty of this task decreases only slightly later in the maintenance phase. The acquisition of funds during the implementation of a co-op program does not present an obstacle to co-op development. However, the acquisition of funds to support co-op does pose a somewhat greater problem later on

EXHIBIT 5.10: DEGREE OF DIFFICULTY EXPERIENCED BY INSTITUTIONS IN IMPLEMENTING AND MAINTAINING COOPERATIVE EDUCATION

	Great Deal of Difficulty		Some Difficulty		Little Difficulty	
	Implementing	Maintaining	Implementing	Maintaining	Implementing	Maintaining
Acquiring funds to support co-op	16%(13)	29%(26)	37%(30)	41%(37)	48%(39)	30%(27)
Persuading faculty to participate	19%(16)	6%(5)	50%(43)	37%(33)	31%(27)	58%(52)
Recruiting students to participate	11%(10)	3%(3)	40%(35)	29%(26)	48%(42)	67%(60)
Recruiting employers to participate	23%(22)	18%(16)	46%(40)	51%(45)	31%(27)	31%(28)

in maintaining a co-op program. Persuading faculty to participate and recruiting students to participate in co-op pose minor obstacles to the implementation of a co-op program, and they subsequently become even less of a barrier in the maintenance of co-op programs.

While in general none of these activities present major difficulties to co-op development, one must examine the level of difficulty experienced by different types of institutions in implementation and maintenance. These comparisons by institutional characteristics reveal two significant relationships. The primary differentiating characteristic was whether a school was a 2-year or a 4-year institution. The 4-year schools experienced greater difficulty in acquiring funds to support co-op during the implementation of a co-op program than did 2-year institutions.[1/] Four-year institutions also experienced greater difficulty in persuading faculty to participate in co-op during both the implementation and the maintenance of co-op programs. While it was shown previously that persuading faculty to participate in co-op does not represent a formidable barrier to either the implementation or the maintenance of a co-op program, it is an obstacle which hampers the efforts of 4-year institutions more severely than those of 2-year schools.

The other relationship which was observed was that institutions in States with low unemployment tend to experience greater difficulty in the recruitment of students to participate in co-op during the implementation of a co-op program than do institutions in high unemployment States. In areas of low unemployment, students are more likely to find employment. Therefore, participation in co-op represents a greater opportunity cost to students in these areas than to students in high unemployment areas where, because of the lack of employment opportunities, participation in co-op does not have the high opportunity cost of

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[1/] Possibly because they are not eligible for VEA, as well as HEA, support for co-op.

foregone income associated with it. While the recruitment of students to participate in co-op is a problem with an intensity that diminishes as a co-op program becomes more firmly established, it does represent a greater obstacle to the implementation of co-op programs in institutions in States with low rates of unemployment.

Although the previously cited problems represent relatively minor obstacles to co-op development during the implementation stage for most institutions, they are more serious for certain types of institutions than others. The sources of difficulty which are more likely to continue to occur in co-op programs after they are established are the acquisition of funds to support co-op and the recruitment of employers to participate in both of which are functions of continued program expansion.

6

WHAT HAS BEEN THE ROLE OF FEDERAL FUNDING IN THE DEVELOPMENT OF CO-OP

The prime objective of this portion of the study was to gather data on the Federal role in the support of cooperative education programs and to determine the impact the Title IV-D program has had on the form and structure of cooperative education as it exists in institutions of higher education. At the time of the study, the basic enabling legislation was Title IV-D, sections 451, 452, and 453 of the Education Amendments of 1968 (PL 90-575), amended in 1972 by PL 92-318, of the Higher Education Act of 1965 (PL 89-329). While funds for co-op programs can be obtained from various titles under the Higher Education Act (HEA), from the Vocational Education Act (VEA), and from local and state appropriations, this study focused exclusively on examining the ramifications of Title IV-D of HEA.

The overall legislative purpose behind the IV-D appropriations was to provide stimulus and support to cooperative education at the college level. In 1975 HEW published their interpretation of cooperative education under the Higher Education Act (PL 92-318). HEW followed the language of the act and defined cooperative education as "that kind of career education that provides an opportunity for full-time students to alternate periods of academic study with periods of off-campus employment". Additionally HEW stipulated "that these periods should be of sufficient duration to provide meaningful classroom and off-campus experiences". Furthermore, "cooperative education

gives students an opportunity to earn funds that may be needed to support and complete their education," and "gives them off-campus experiences that are closely integrated with and that enrich their total education and their academic and/or career goals."[1/]

These instructions for Title IV-D grant applications stipulated the conditions which had to be met in order for an institution of higher education to be eligible to receive a cooperative education grant. These grants were awarded to accredited institutions of higher education in order to support the following activities:

- supplement existing career education opportunities;
- modify cooperative education calendars and curricula;
- improve services to low income and minority, veterans, women and handicapped students participating in cooperative education programs;
- improve planning and coordination for effective interfaces between academic and career goals; and
- increase institutional commitment to cooperative education.

It should be noted that to a certain degree, the findings of this study vis-a-vis Title IV-D have been preempted by a chain of events which led to Title IV-D being supplanted by a newer piece of legislation relating to postsecondary cooperative education programs, Title VIII-Cooperative Education, of Public Law 94-482, the 1976 Amendments to the Higher Education Act of 1965. The new law is essentially similar to the IV-D legislation with the following important exceptions:

- The words "full-time" are deleted from the definition of cooperative education so that it now reads "alternating periods of academic study and of public or private employment." This permits parallel programs to be funded.

1/ Instructions for Submitting a Cooperative Education Program Application, Academic year July 1, 1975 - June 30, 1976, HEW, Washington, D.C., 1975, p. 3.

- Grant sizes are increased to a maximum of $175,000 per year per single institution, or to $125,000 per year for each member of a consortium of institutions.
- Institutions must specify in their grant application which services are to be performed by organizations other than the applicant and the compensation to be paid for these services.
- The limit for grants is raised from three years to five, with the proviso that the Federal government's share of the total administrative cost of the program must fall from up to 100 percent for the first year to no more than 30 percent for the fifth year.
- Funding preference will be given to programs:

  "which show the greatest promise of success because of--

  (1) the extent to which programs in the academic discipline with respect to which the application is made have had a favorable reception by employers;

  (2) the commitment of the institution of higher education to cooperative education as demonstrated by the plans which such institution has made to continue the program after the termination of Federal financial assistance; and

  (3) such other factors as are consistent with the purposes of this section."

Because our assessment of the Federal role in cooperative education was specifically limited to an examination of the Title IV-D legislation, the Final Report does not address this newer piece of legislation, just as it does not address other Federal programs which provided support for post-secondary cooperative education programs such as Parts G (Cooperative Education), C (Research), or D (Exemplary Projects) of the Vocational Education Amendments of 1968. However in this chapter, the implications of the new act versus the old will be addressed briefly.

Given this background of government involvement, the questions that arise pertain to what has been the role and the effect of the Federal funding on the growth and structure of cooperative education. This chapter addresses these key questions:

A. How has IV-D impacted on the growth of co-op?

B. Do co-op programs differ by IV-D versus non-IV-D funding status?

C. For what purposes are IV-D funds used?

D. What were the characteristics of the institutions which received IV-D funds?

I. HOW HAS IV-D IMPACTED ON THE GROWTH OF CO-OP?

One of the more important and interesting policy issues which this study has tried to address deals with the question of at what stage of program development Title IV-D funds have been most important and, given the limited funds available, at what stage should they be concentrated in order to have maximum impact on the growth and development of cooperative education in institutions of higher education? Currently awards can be, and are being made to both institutions without cooperative education programs for the purposes of planning and implementation, as well as to schools with existing programs for the purposes of strengthening and expanding them. Thus, it would be important to know if there is any evidence which indicates whether Federal policy should emphasize providing grants to start up new programs or providing grants to existing co-op programs. In conjunction with this we need to know if the IV-D grants have been sufficient to initiate viable co-op programs and even more importantly, were they needed at all? Similarly we need to determine what has been the importance and impact of IV-D grants on the older, already operating programs of cooperative education.

Overall, the evidence seems quite clear that the Title IV-D program has had an extremely significant impact on the growth of cooperative education. The data to be presented here, shows clearly that the IV-D program has been a significant factor in the growth of cooperative education. The manner in which this impact has come about has been primarily through the IV-D program's stimulus to, and

support of new programs of cooperative education. The co-op directors in our sample attached great importance to the contribution of IV-D at all three stages--planning, implementing, and strengthening--as was mentioned in the previous section. However, even greater importance especially in the earlier stages of development was attributed to the IV-D funding by directors of co-op programs which were initiated with these funds (see Exhibit 6.1 below). Even more im-

EXHIBIT 6.1: IMPORTANCE OF IV-D FUNDS

	% Rating IV-D Funds as very Important at Various Stages of Development for:	
	Existing Programs	New Programs
PLANNING	56%	96% ($p < .01$)
IMPLEMENTING	70%	96% NS
STRENGTHENING	76%	81% NS*

*Not significant. Where NS appears only in one column, only that column is included. Where it appears only in the left-hand column, the entire run is included.

portantly, among the programs which started co-op with IV-D funds, the vast majority (86 percent) stated that without the Title IV-D grant, the cooperative education program would not have been initiated. *Thus, it seems clear that the Federal monies were needed, and that the recent surge in the number of schools offering co-op would not have come about without the Federal involvement in the form of the Title IV-D program. Additionally, virtually all of the co-op directors and the senior academic officials interviewed feel that these programs will be continued after the IV-D funding has ended.*

While the impact of IV-D as a start-up mechanism for new co-op programs appears to be its most important effect, it also seems to have had utility in the expansion of existing programs, both in terms of numbers of students and in terms of numbers of areas offered. As mentioned earlier in this report, the IV-D programs tend to offer co-op

in less traditional areas more often, and according to the co-op directors of schools which had co-op before receiving IV-D funds, about 65 percent (17 out of 26) stated that one impact of the funding was that new co-op program areas were initiated. It appears that this would not have occurred otherwise, since the older IV-D programs do offer co-op in more areas than is the case for the older non-IV-D programs as seen in Exhibit 6.2 below.

EXHIBIT 6.2: NUMBER OF CO-OP PROGRAM AREAS

% of Schools with programs in existence prior to 1973-74 offering co-op in:	4-Year IV-D	4-Year Non-IV-D	2-Year IV-D	2-Year Non-IV-D
1 - 2 Areas	22%(4)	53%(8)	0	56%(10)
3 Areas	44%(8)	27%(4)	20%(2)	33%(6)
4 - 5 Areas	33%(6)	20%(3)	80%(8)	11%(2)
	100%	100%	100%	100%

$p < .05$

Later in this chapter, we will present data showing that there were no significant differences in enrollment among the different types of schools. However, these same data indicate a tendency for greater increases in co-op enrollment at schools with IV-D funding. In the following pages we shall explore this finding in greater detail.

Co-op enrollment may also be viewed and analyzed as a proportion of the total institutional enrollment. The following Exhibit 6.3 gives the proportion of the 1975-76 total institutional enrollment which is in co-op, the average absolute increase in the proportion from 1973-74, and this increase expressed as a percent of the 1973-74 proportion for the different types of schools. As noted in the exhibit, there is a significant difference between the types in terms of the percentage increase, with IV-D schools and 4-year schools exhibiting larger increases.

EXHIBIT 6.3: CHANGES IN PROPORTION OF TOTAL INSTITUTIONAL ENROLLMENT IN CO-OP, 1973-74 to 1975-76

	% of School in Co-op	Average Absolute Increase	Average Percentage Increase
4-Year IV-D	13.6%	2.0	147.1
4-Year Non-IV-D	10.1%	0.6	41.8
2-Year IV-D	9.1%	0.9	77.2
2-Year Non-IV-D	7.4%	0.2	13.5
	NS	NS	p .05

However, as also noted earlier, the IV-D co-op programs are significantly newer than non-IV-D, and therefore might be expected to have more rapid growth rates. For this reason, a series of analyses of variance were produced in order to more carefully explore the relationship between the growth in co-op enrollment (both actual and as a proportion of total enrollment) and other institutional characteristics. In addition to IV-D funding status, 2-versus 4-year level of school, public versus private control, and whether or not the school had any funds (other than IV-D) specifically earmarked for co-op were included in this analysis. Basically what was found was that when program age was taken into account, the IV-D funding status, as well as most of the other factors, no longer showed any significant correlation with enrollment changes. The one exception was that 4-year institutions experienced a greater increase in the proportion of total enrollment in co-op (especially in terms of the percentage increase) even though the 4-year schools generally have older co-op programs.

One additional way in which the IV-D program could have contributed to the development of co-op is by the encouragement of the development of institutional and other alternative sources of funding for cooperative education. Exhibit 6.4 below shows the average amount of money, not including IV-D funds, that was specifically earmarked for co-op in 1975-76 for various categories of IHEs.

EXHIBIT 6.4: AVERAGE AMOUNT OF NON-IV-D FUNDS SPECIFICALLY EARMARKED FOR CO-OP BY TYPE OF INSTITUTION

	Average 1976 Dollars			
	4-Year IV-D	4-Year Non-IV-D	2-Year IV-D	2-Year Non-IV-D
Old Programs	$12,553(15)	8,857(14)	2,440(9)	4,694(14)
New Programs	13,695(5)	0(1)	4,508(13)	0(2)

NS

While none of the comparisons are statistically significant, there are a number of trends which should be noted. First, 4-year schools tend to have larger amounts of funds specifically for co-op than do 2-year schools. There is little difference between IV-D and non-IV-D among the older programs. However, for the newer programs, none of the non-IV-D have any such funds specifically earmarked for co-op while the new IV-D programs have as much of these types of funds as any of the older programs. However, when we examine the change in the amount of such funds from 1973-74 to 1975-76, we do not find any sharp increase in co-op funds for these IV-D programs. (Actually, on the average there has been a small decline). Thus it would appear that IV-D has not encouraged the development of alternative sources of financial support for their co-op programs.

Based on the data collected in this study, it is evident that the IV-D funds have had a profound impact on the number of postsecondary co-op programs in existance and on the types of institutions and programs which are presently offered. Specifically, IV-D funds have contributed greatly to the growth of co-op in 2-year schools and in some of the emerging co-op program areas such as liberal arts, T&I, and health. They have also induced large numbers of institutions to experiment with the co-op concept, and nearly all of these schools now state that they intend to maintain the programs after Federal funds are no longer available. Thus, the IV-D funds have appeared to function as "seed money" in an extremely effective manner.

II. DO CO-OP PROGRAMS DIFFER BY IV-D VERSUS NON-IV-D FUNDING?

Title IV-D of HEA had certain features which should be considered in an assessment of the effectiveness of Federal funding. For one, the maximum amount which a single grantee could receive in any fiscal year under Title IV, Part D for the administration of cooperative education programs was $75,000. For another, no institution could receive Federal support for more than 3 fiscal years under this Title. Hence, the funding levels per institution were small and impermanent in relation to other operating budget items. As discussed earlier in this report, the 1976 amendments increased the permissible level of funding and extended the funding period to five years.

One important question under this general issue of how IV-D has impacted on the growth of co-op, addressed in this section, is: do programs with IV-D funds differ from co-op programs without these funds in terms of structural and operational characteristics? Another aspect of this issue to be discussed is whether the two categories of programs differ in terms of their success. While success of a cooperative education program can be variously defined, and the strict cost-benefit criterion of success will be dealt with elsewhere in this report, we will be concerned in this section primarily with the perceived benefits and satisfactions from the points of view of both the students enrolled in these programs as well as the employers who hire cooperative education students.

The overall conclusion that can be drawn from the data collected is that, by and large, co-op programs funded by Title IV-D show no consistent or significant pattern of differences from those programs not receiving these funds. In a few limited specific instances, there appears to be at least a tendency toward some variation in program features between these program types, and these will be discussed below. Nevertheless, in terms of institutional characteristics, program operational features, or perceptions of

success, Title IV-D does not appear to have greatly impacted on the general nature and structure of cooperative education.

We have noted that differences are minimal and the variability within categories of schools is extremely large, but some important trends should be noted.

The co-op enrollments at IV-D institutions are increasing, while those at non-IV-D schools seem to be remaining stable or even showing a decline.

Secondly, the data also indicate that the co-op programs supported by IV-D in 2-year schools are somewhat smaller than those in the other three categories. This is, of course, due to the fact that the 2-year IV-D programs contain the greatest proportion of programs that have only recently been initiated. In fact this characteristic, recently of origin, is one of the few areas in which IV-D programs, at least those in 2-year schools, are significantly different than non-IV-D programs, as seen in Exhibit 6.5.

EXHIBIT 6.5: AGE OF CO-OP PROGRAM

	4-Year IV-D	4-Year Non-IV-D	2-Year IV-D	2-Year Non-IV-D
New*	25.0%(6)	28.0%(6)	58.3%(14)	10.0%(20)
Old	75.0%(18)	72.0%(15)	41.7%(10)	90.05(18)

*New has been operationalized as a program which admitted its first co-op student in the 1973-74 academic year or later. $p<.01$ (p represents the level of confidence associated with the observed differences; i.e., the proportion of times these differences could have occurred by chance.

The students from IV-D and non-IV-D schools were compared in terms of the demographic and socioeconomic characteristics of the students enrolled in their co-op programs and the employers participating in these programs. Additionally, the co-op students from IV-D and non-IV-D schools were compared in terms of their age, sex, ethnicity, parental income, education background, and their grade point average. However, very few statistically significant relationships were found.

One significant pattern that did appear in these comparisons was that of a somewhat lower socioeconomic background among students in IV-D programs in 4-year institutions as compared to 4-year non-IV-D programs. This is in part due to the fact that engineering programs, which tend to contain students of higher socioeconomic background, are more common in the older co-op programs of the 4-year non-IV-D schools.

On the other hand, among the students in 4-year liberal arts programs, IV-D schools still have higher proportions of students with lower parental income and education backgrounds. This corresponds with the fact that there is also a higher proportion of minority students in these programs. There is also a higher proportion of minority students in IV-D funded business programs at both 2- and 4-year schools. Among the IV-D business programs in 2-year schools which came into existence prior to 1973-74, there is a higher proportion of males than in the corresponding 2-year non-IV-D programs. This would indicate that these older business programs that have not received IV-D funding have tended to more frequently offer programs in secretarial science, while those with IV-D grants have put greater emphasis on more typically male-dominated areas, such as business administration and accounting. Finally, students in 4-year IV-D programs have higher grade point averages (GPAs) than those in non-IV-D programs. However, this is largely a function of the previously mentioned concentration of engineering programs in non-IV-D schools, since engineering students, in general, have much lower GPAs than students in other program areas. When program area is taken into account, little difference is found between the GPAs of 4-year IV-D and non-IV-D students.

In terms of the background characteristics of the employers who hire the co-op students, even fewer differences are found between those associated with IV-D and non-IV-D programs. These two groups of employers were compared in terms of the following characteristics:

- size of firm;
- type of industry;
- unionization or non-unionization of firm;
- occupational area for which students are hired (Business, Engineering, Health, T&I, or Liberal Arts);
- job category of students (professional, other white collar, blue collar, service);
- number of students employed; and
- length of time hiring students from school's co-op program.

With one exception, no significant differences were found between the employers of students from IV-D as compared to non-IV-D programs. Among the employers associated with 4-year schools, those hiring from non-IV-D programs typically hired a statistically significantly larger number of students from the institutions' co-op program (an average of 12.5 as compared to 3.8 students hired by employers of students from IV-D programs). We would hypothesize that this is related to the earlier cited fact that 4-year non-IV-D institutions are more heavily concentrated in the traditional co-op discipline of engineering where hiring has been relatively strong in recent years.

One area in which IV-D funds appear to have had some impact is in the support of co-op in the more non-traditional program areas of liberal arts and trade and industry (T&I). Cooperative education was started in the engineering area and has also been fairly well established in the business areas. Co-op programs in liberal arts and T&I are a relatively recent phenomenon, and it appears that the growth in those areas has been encouraged by the IV-D programs. While our data are not definitive, it does seem that this has occurred in schools with established co-op programs as well as the schools which have only recently initiated programs (see Exhibits 6.6 and 6.7).

It is also interesting to note that engineering, the oldest co-op area, does seem to be the one in which few new programs are developing. For the other four areas, the proportion of schools offering co-op in that discipline is about the same for schools that

EXHIBIT 6.6: AREAS IN WHICH CO-OP IS OFFERED FOR OLDER PROGRAMS

% of schools offering co-op in:	4-Year IV-D	4-Year Non-IV-D	2-Year IV-D	2-Year Non-IV-D
Business	89%(16)	67%(10)	100%(10)	100%(18)*
Engineering	72%(13)	73%(11)	70%(7)	28%(5)*
Health	33%(6)	20%(3)	50%(5)	22%(4)
Liberal Arts	83%(15)	60%(9)	100%(10)	28%(5)*
Trade-Industrial	33%(6)	57%(4)	100%(10)	44%(8)*

* $p < .01$

EXHIBIT 6.7: AREAS IN WHICH CO-OP IS OFFERED FOR NEWER PROGRAMS

% of schools offering co-op in:	4-Year IV-D	4-Year Non-IV-D	2-Year IV-D	2-Year Non-IV-D
Business	100%(6)	83%(5)	86%(12)	0*
Engineering	0	50%(3)	29%(4)	0
Health	50%(3)	33%(2)	21%(3)	100%(2)
Liberal Arts	83%(5)	67%(4)	64%(9)	0
Trade-Industrial	17%(1)	17%(1)	50%(7)	0

* $p < .01$

have only recently initiated co-op as for schools with longer established programs. However, for engineering, while 67 percent of the older co-op schools offer co-op in this area, only 26 percent of the schools which began co-op in the past few years offer a co-op program in engineering.

Co-op as a mandatory degree requirement is not more common in IV-D versus non-IV-D schools, although as might be expected newly initiated co-op programs are almost always voluntary. For this reason, and since IV-D programs are new in general, the following exhibit (6.8) presents a comparison among the different school types only for the older programs.

EXHIBIT 6.8: MANDATORY CO-OP PROGRAMS

% of schools with mandatory programs (of older programs offering the area):	4-Year IV-D	4-Year Non-IV-D	2-Year IV-D	2-Year Non-IV-D	
Business	6%(1)	10%(1)	30%(3)	28%(5)	NS
Engineering	15%(2)	9%(1)	0	25%(1)	NS
Health Professions	20%(1)	67%(2)	40%(2)	50%(2)	NS
Liberal Arts	14%(2)	0	10%(1)	25%(1)	NS
Trade-Industrial	0	25%(1)	20%(2)	43%(3)	NS

Also, there is no difference between the two types in terms of any desire to convert co-op to a mandatory program.

Offering credit for the co-op work experience does not seem to be more common among IV-D schools, although a very important factor is the level of the school. As seen in Exhibit 6.9, credit is much more frequently given by 2-year schools, both IV-D and non-IV-D. While this relationship is statistically significant only for business and engineering, the same pattern also is found in the other three program areas

EXHIBIT 6.9: CREDIT OFFERED IN DIFFERENT SCHOOL TYPES BY PROGRAM AREA

% of schools (of those offering the area) awarding credit in:	4-Year IV-D	4-Year Non-IV-D	2-Year IV-D	2-Year Non-IV-D
Business	70%(14)	64.3(9)	95.5(21)	100.0(18)*
Engineering	46.2(6)	46.2(6)	100.0(10)	100.0(6)*
Health	83.5(7)	71.4(5)	100.0(9)	87.5(7)
Liberal Arts	68.8(11)	78.6(11)	94.1(16)	85.7(6)
Trade-Industrial	66.7(4)	71.4(5)	93.3(14)	100.0(9)

* $p < .01$, for 2-year vs. 4-year comparison

Another area of concern is counseling and placement services. In terms of the services provided to the students, such as counseling and placement, there were no significant differences between IV-D and non-IV-D programs. Also, the role of the co-op director in terms of his position in the institution or the ways in which his responsibilities are structured, are not different for these two types of programs. Specifically, the following other variables were examined and found to show no statistically significant differences between schools receiving IV-D funds and those without such funds:

- To whom in the institution the co-op director reports. Most co-op directors, both in IV-D and non-IV-D institutions report to an academic dean (42%, overall).
- Whether or not they have any non-co-op responsibilities. Only 8 percent have no other responsibilities.
- Hours devoted to following responsibilities:
  - Administration (10.7 hrs/week overall)
  - Teaching (1.4)
  - Counseling with faculty (2.8)
  - Contact with employers (5.5)
  - On-site teaching/evaluation of students (2.8)
  - Other contact with students (4.6 overall, but much greater in 4-year schools, 7.0 hours, than in 2-year, 2.0 hours)
  - Reasearch (1.3)
  - Other co-op activities (1.8).
- Provision of placement service for co-op in addition to regular school placement (occurs in 22% of schools surveyed).
- Types of counseling (over 90% provided general career, work experience, academic and personal counseling).
- Provision of counseling by:
  - Co-op director (84%)
  - Faculty (68%)
  - Counseling staff (65%)
  - Placement office (41%).

Thus it appears that IV-D is having little programmatic impact on cooperative education. This is not surprising since the grants are awarded with few restrictions or requirements concerning the types of programmatic features that are to be supported with these monies.

On the other hand, as was discussed earlier in this chapter, these funds are having a major impact on the growth of co-op.

This general lack of difference in the structure of co-op between schools receiving IV-D funds and those not receiving such funds, is again borne out when looked at from the point of view of the participating students and employers.

As noted elsewhere in this report, co-op has in general done an excellent job of providing students with work experiences which are related to their major areas of study. As seen in Exhibit 6.10, the different types of programs IV-D and non-IV-D in both 2- and 4-year schools, have all been equally successful in this regard.

EXHIBIT 6.10: WORK EXPERIENCE RELATED TO MAJOR AREA BY DIFFERENT SCHOOL TYPES FOR CO-OP STUDENTS

	4-Year IV-D	4-Year Non-IV-D	2-Year IV-D	2-Year Non-IV-D
Related	78.1%(281)	81.6%(124)	83.5%(253)	84.5%(95)
Not Related	21.9%(79)	18.4%(28)	16.5%(50)	15.5%(18)
NS	100%	100%	100%	100%

The co-op students in our sample were asked to rate their co-op programs in terms of nine specific components as well as its overall quality. These can be used as one very important criterion of success against which the programs funded by IV-D can be compared to those without IV-D funds.

In most cases there are no statistically significant differences in program quality as measured by the students' perceptions between the different types of co-op programs. This is the case in terms of quality of training from employers, adequacy of employers facilities, recruitment of employers in career relevant areas, ongoing communication with employers and placement in work experience. In two cases there are statistically significant differences, but they are attributable to the level of school rather than IV-D funding. The relevance of classwork to the work experience is rated higher by students attending 2-year schools, both IV-D and non-IV-D, than by students at either

type of 4-year school. On the other hand, placement upon the graduation component of the co-op programs is viewed as better by 4-year students than by those in 2-year schools. In relation to the program components of counseling in career planning and quality of instruction, what is found is that students in 2-year IV-D schools rate these higher than do students in the other three types of schools.

As was pointed out earlier, the 2-year IV-D schools contain the highest proportion of newly initiated programs. In fact, it appears that it is the newness of the program, rather than its funding source, that is the major factor in explaining the higher rating given those components by the students. For counseling in career planning, 25 percent of students in recently initiated programs rate this area as excellent as compared to only 10 percent of the students in older programs. Similarly, the quality of instruction is rated as excellent by 35 percent of those in newer programs, as compared to 22 percent of the students in older programs. These differences are also, in part, related to the program area of the students. Counseling in career planning and placement upon graduation tend to be rated higher by students in engineering programs. On the other hand, relevance of classwork to work experience is rated lowest by engineering students, and rated highest by those in health. In terms of this rating of overall quality, what differences do exist again appear to be more a function of program age than level of school.

Finally program success can also be defined from the point of view of the perceptions of the employers who hire co-op students. There are no significant differences between employers associated with different types of co-op schools in terms of their ratings of co-op students as compared to regular workers in terms of their technical knowledge, communication skills, quality of work, or quantity of work.

In terms of the employers' ratings of the overall quality of the co-op programs with which they are associated, there are again no

statistically significant differences between types of schools. However, it should be noted that there is a tendency for lower ratings to be given by employers hiring students from 4-year non-IV-D schools than for the other three types. When specific characteristics of the employers are taken into account, including size of firm, type of firm, type of jobs for which students are hired, length of time associated with the co-op program, and whether or not the firm is unionized, this lack of difference between employers associated with IV-D programs as compared to non-IV-D programs remains a consistent pattern.

In summary then, programs which have received Title IV-D funds are very similiar to those that have not received such funds. This is not to be taken as an indictment of the Federal program. As is shown elsewhere in this report, co-op, in general, is providing substantial benefits to its participants; therefore, the major impact the IV-D program has had on the growth of cooperative education is in itself a positive contribution to higher education. However, if it is now considered appropriate to expand the Federal role to include promoting improvements in the quality of cooperative education programs, then the implications are that some changes in Federal policy would be desirable. As has been shown elsewhere in this report, the area in which co-op seems to be most in need of improvement is in terms of activities and experiences, especially those provided by the schools, which would promote better career choices by the student. Given that IV-D monies presently go to the IHE, it would seem that in this area, relatively minor changes in Federal policies and procedures could have significant impact. The most important change would be to initiate more requirements and restrictions aimed at encouraging the use of Federal funds to support career development activities in the institution.

III. FOR WHAT PURPOSES ARE IV-D FUNDS USED?

As might be expected, since there were few restrictions on the use of the Title IV-D monies, these funds have been put to a wide variety of uses. Nevertheless, there are a few general categories which have comprised the primary purposes for which these monies have been used in most of the schools. The most frequent use was to pay salaries of the co-op staff, specifically mentioned by 17 of the 48 IV-D schools in our sample. (A number of schools answered in terms of very general purposes, e.g., administration; in many of these schools it is very likely that the IV-D monies, at least in part, also went into staff salaries.) Other common uses of the IV-D funds were for travel (12 schools), for supplies and office expenses (13), for program expansion (14), and for planning and administration (in 12 schools).

While slightly more new programs used the IV-D monies to create new positions, this was very common among all schools (in 84% overall, in 93% of the new programs, and in 70% of the existing programs). In most schools these IV-D monies were used to create the position of co-op director or coordinator. In about one-fifth of the existing programs new clerical staff positions were created.

The typical school in this sample received an IV-D grant of $25,732 in 1975-76. While the 4-year schools in this sample received slightly larger grants than 2-year schools, the differences were not statistically significant. No differences in the size of grants were found between public versus private schools or in terms of newer versus older co-op programs. These findings exactly parallel those reported in our earlier "Federal Funding Patterns" substudy.

One of the few major restrictions in the legislation authorizing the IV-D programs was that the co-op programs to be supported generally had to be of an alternating rather than parallel type. Since this restriction has been dropped in the new legislation, it is interesting to determine the extent to which IV-D funds had been used for parallel

programs, and more importantly, to assess if the change to include parallel programs was a sound one. Basically it appears that this change will have a very positive impact on the growth of co-op, especially in 2-year schools. As seen in Exhibit 6.11 below, the desire to be able to offer parallel work and study is almost unanimous among the co-op directors at 2-year schools and is quite strong even within 4-year schools.

EXHIBIT 6.11: PREFERENCE FOR OPTION FOR PARALLEL WORK AND STUDY BY DIFFERENT SCHOOL TYPES

	4-year IV-D	4-Year Non-IV-D	2-Year IV-D	2-Year Non-IV-D
Prefer Parallel Work and Study	56.5%(13)	52.4%(11)	91.7%(22)	52.4%(11)
Not Prefer Parallel Work and Study	34.8%(8)	28.6%(6)	4.2%(1)	4.8%(1)
Does not Apply	8.7%(2)	19.0%(4)	4.2%(1)	42.9%(9)
	100%	100%	100%	100%

In terms of actual practice, the majority of students at 2-year schools, even those receiving IV-D funds, have been on a parallel schedule. While in 4-year schools most students have adhered to the traditional and mandated pattern of alternating periods of full-time study with periods of full-time employment, it is significant that in 4-year programs of more recent origin that developed without IV-D funding, the proportion of students on a parallel schedule is about the same as in co-op programs in 2-year schools (see Exhibits 6.12 and 6.13 below)

EXHIBIT 6. 12: PRECENTAGE OF STUDENTS ON PARALLEL SCHEDULE BY TYPE OF SCHOOL

4-Year IV-D	18%(22)
4-Year Non-IV-D	26%(12)
2-Year IV-D	63%(20)
2-Year Non-IV-D	56%(10)

EXHIBIT 6.13 PERCENTAGE OF STUDENTS IN 4-YEAR SCHOOLS ON PARALLEL SCHEDULE BY AGE OF PROGRAM

IV-D Older Programs	17%(17)
IV-D Newer Programs	21%(5)
Non-IV-D Older Programs	21%(9)
Non-IV-D Newer Programs	72%(3)

Thus it seems clear that the new option for parallel schedule will allow for a significant amount of growth of new co-op programs, certainly in 2-year schools and very likely in 4-year schools.

In addition to the specific requirements of the HEA Title IV-D legislation, USOE has established guidelines for high priority areas to which funded cooperative education programs should address themselves. These include the degree to which the programs have become aware of and have tried to incorporate the special needs of disadvantaged and/or handicapped students, and the extent to which such programs have expanded and improved services to minority groups and women. Thus, we will now address the following questions: what proportions of such students are involved in Federally funded co-op programs? What proportions of such students are involved in non-Federally funded programs: To what degree have previously existing programs that now receive IV-D funds been able to increase services to such students?

The proportion of co-op enrollment which is composed of females is almost identical in the four types of schools. Also, the proportion of all females in the school who are enrolled in co-op does not vary significantly among the types of schools.

In terms of minority enrollment, slightly higher (but not statistically significant) proportions are found in IV-D schools. However, in terms of the proportion of the minority enrollment which is in co-op, it appears that, except possibly among 2-year schools, IV-D funds have had little impact on the recruiting of minority students for co-op. Given the fact that the variability within type is so much greater than the differences between types of schools, no definitive conclusions can be drawn.

We also found no significant differences between IV-D and non-IV-D schools in terms of special provisions to deal with the needs of disadvantaged or handicapped students. *Thus it appears that overall, IV-D funding has had little if any impact on encouraging co-op programs to expand and/or improve their services to the special target populations which were to be given priority according to the Title IV-D program guidelines.*

IV. WHAT WERE THE CHARACTERISTICS OF THE INSTITUTIONS WHICH RECEIVED IV-D FUNDS?

In examining a Federal program in which institutions compete for a limited amount of funds, an important question always is: who got the money? To attempt to answer this question, a substudy was conducted under this contract. The results of this substudy were published in November, 1976 in a report available from the Office of Planning, Budgeting and Evaluation (OPBE) of the U.S. Office of Education, entitled "Report on Federal Funding Patterns for Cooperative Education under Title IV-D of the Higher Education Act." It was based upon an examination of all proposals funded in 1975-76, a sample of proposals which were not funded, and personal interviews with cooperative education staff in the Office of Education. The major objectives of that substudy were:

- To examine the administrative practices and procedures governing the award, monitoring, and evaluation of Title IV-D grants;
- To describe and analyze trends in the characteristics of institutions awarded grants for Fiscal Years 1973-74, 1974-75 and 1975-76; and
- To compare the characteristics of a sample of funded and non-funded grant applications of 1975-76.

In achieving these purposes, a number of significant findings were uncovered, and several general conclusions developed. While complete details are available in the report cited above, a summary of these findings is presented below on the following pages.

1. Summary of Finding From the Federal Funding Patterns Substudy

- Geographic Distribution

  The geographic distribution of recipient institutions of IV-D funds did not conform to the distribution of national population or of undergraduate colleges. One historical explanation for this finding is the fact that a large number of the early IV-D applicants had been Title III recipients, and a high proportion of these schools were located in OE Region IV*. Thus, it would be expected that the institutions with IV-D co-op programs would have a somewhat similar geographic distribution. This area also submitted more applications than other OE Regions.

- Types of Institutions

  There was no significant difference between the funded and non-funded applications in terms of institutional type or institutional control. However, an institution which applied as part of a consortium may be more likely to receive funding than an institution which applies individually.

  Twice as many public institutions were funded as private institutions. Consortium schools were even more likely to be publicly controlled. Those schools which have most often been the recipients of IV-D funding are the 2-year institutions.

- Funding Characteristics

  There is a significant difference in funding histories between the funded and non-funded samples. The funded sample comes from institutions which, for the most part, were in their third year of consecutive Title IV-D funding (32 institutions). The non-funded applications come from institutions which, for the most part, had never received Title IV-D funding (39 institutions).

  As can be expected from the funding history of the applications studied, prior IV-D funding is statistically, an excellent predictor that an institution will receive continued funding as permitted by law, but the amount previously received does not affect the chances of being funded again.

*OE Region IV covers the South Atlantic area consisting of seven states: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, and Tennessee.

The average grant award was less than $30,000 and hence considerably less than the $75,000 maximum set by law. Both funded and non-funded applications asked for considerably more, on the average, than they received. However, we did not detect any significant difference between the groups in terms of proposed IV-D budgets or non-IV-D sources of support for co-op.

There was a difference, however, in average non-IV-D support for cooperative education. Non-funded applications reported a higher total level of non-IV-D support, especially Title III funds. Funded applications report slightly greater institutional support of cooperative education. This might be interpreted or meaning that programs funded under other Federal law were less apt to be provided with IV-D support; while larger institutional funding commitments increased the likelihood of funding.

- Program Purposes

An institution was more likely (in the 1975-76 year) to receive a grant for strengthening or expanding its program than for planning purposes. According to the co-op program office staff, this reflected a deliberate shift in their funding strategy to focus more heavily on those lished projects.

- Staffing Characteristic

The cooperative education staff of funded institutions are slightly larger than non-funded institutions. However, there has been a general decline in the average number of full- and part-time staff of funded institutions over the three years studied. This may reflect the effect of inflation on personnel costs or it may be due to the fact that fewer personnel are needed after the first few start-up years.

- Integration With Regular Academic Programs

The substantial majority of funded programs in 1973-74 and 1974-75 (about 75%) awarded academic credit for participation in cooperative education. For 1975-76, about the same number awarded non-additive credit, i.e., credit which applies to a degree in the same way as academic courses. The length of a co-op work experience in most schools was a semester, although many schools (especially public) utilized the quarter system. An average of six credits were awarded for the work experience. An institution which awarded non-additive credit was more likely to receive funding than one which awards additive credit.

- Enrollment Characteristics

  The enrollments in funded and non-funded institutions did not differ greatly. The funded institutions exhibited a higher Black enrollment, however. Of the IV-D funded institutions, private 4-year and public 2-year institutions showed the largest overall co-op programs as measured by the average (mean) number of students. Between 1974-75 and 1975-76, private institutions of all types expanded their co-op programs, while the size dropped at public 2-year institutions. Black enrollment in co-op programs has been highest at private 4-year institutions, while Spanish-surname enrollment has been higher at public 2-year institutions.

- Characteristics of Work Component

  Funded applications on the average reported a higher number of students are placed in jobs as part of the cooperative education program. However, non-funded applications report a higher number of employing agencies.

  There was no significant difference in the earnings of co-op students in the two groups of institutions.

- Types of Curricula

  Engineering programs fared particularly well in terms of funding, while programs in the social and behavioral sciences did not. Programs in vocational arts and technology, and in office occupations, also fared poorly. This is largely because co-op programs in these areas have traditionally tended to be parallel programs, and IV-D funds were designated for alternating programs.

A key change between the 1976 Amendments and the IV-D legislation relates to the duration of funding. Our study asked the senior academic officials whether or not they favored extending the grant period beyond IV-D's limitation of three years. Not surprisingly, 83 percent of them favored such an extension. On the other hand, as already reported, we found that most of the co-op programs were slated to be continued with or without additional Federal funds. Therefore, all we can really say regarding the extension in the new legislation to five years is that the move will certainly be welcomed. *However, whether or not the extension best serves the interests of the govern-*

ment is dependent upon whether the priority should now go to initiating programs, an area in which IV-D excelled in the past and in which there are still plenty of institutions that might be induced to initiate programs, but something that the extension of the grant period will not support. Given the program's history of providing funds to institutions over a multi-year period, it appears likely that many of the present set of schools receiving IV-D funds will continue to receive them for the additional two year period. If this does occur, it will result in a smaller proportion of the available money being available for grants to institutions which do not presently have a co-op program or have a program which has thus far not received support under IV-D.

7

PROGRAM AND POLICY IMPLICATIONS

This Chapter will briefly summarize the results of this study by recapitulating the findings which relate to perhaps the two most important study issues:

- What are the parameters of a viable co-op program?
- What role, if any, should be played by Federal support of co-op in the future?

I. WHAT ARE THE PARAMETERS OF A VIABLE CO-OP PROGRAM?

This study has shown that the great majority of the undergraduate programs are viable for nearly all types of undergraduate institutions and students, as well as for virtually every kind of employer included in the study.

In the case of undergraduate institutions, we learned that co-op programs appear to be able to be operated in most school in such a manner that the income they generate at least covers the program expenses, provided that the programs are either relatively small in size or else are comparitively large. It is primarily when programs are just getting started, or when they are caught inbetween the optimum size ranges, that outside funding is needed for them to operate on a break-even basis. We also learned that in the institutions, the programs appear to be highly regarded as career education mechanisms and to provide valuable service as financial aid mechanisms.

In the case of students, we were able to use lifetime earnings stream data to show that for every program area in the 4-year and 5-year schools included in the study, participation in co-op resulted in graduates more than recovering the opportunity costs of participating in co-op and being hired into higher paying jobs which were more closely related to their vocational interests. Similiar results were obtained for most discipline areas in 2-year schools. In fact the only group which appeared not to benefit from co-op participation was students entering college with significant employment experience gained prior to entry.

In the case of employers, we were able to show that co-op students typically perform as well, or even better, than their non-co-op counterparts while receiving lower pay and benefits. We found the pay differences to be greatest in the smaller firms; but we found the larger firms to be reaping additional benefits through the use of co-op as a recruiting mechanism. Over one-third of the co-op graduates included in this study eventually accepted jobs with one of their co-op employers.

II. WHAT ROLE, IF ANY, SHOULD BE PLAYED BY FEDERAL SUPPORT OF CO-OP IN THE FUTURE?

The most valuable service which the IV-D legislation has rendered to the educational community in the past is in providing support for co-op programs which are either just getting established or else are trying to make the transition from being a small program to becoming a large one. A recurring theme in visiting the IV-D institutions was that, without the Federal legislation, the programs might never have gotten started. Also, the study findings showed that the IV-D funds have been instrumental in encouraging programs to expand into new discipline areas.

Based on our findings relating to co-op's effectiveness as a menas of providing career education, as a means for facilitating satisfactory placements of college graduates, as a financial aid

mechanism, and as a source of valuable labor for employers, it appears to be in everyone's interest for increasing numbers of students, institutions, and employers to become associated with cooperative education programs. Yet, according to our calculations, it does not appear likely that, by 1980, even 10 percent of the American undergraduate student population will include this valuable program in their course of study.

Since this estimate is based on continued support for cooperative education under the Higher Education Act, and since such support has proven to be such an effective instrument of growth, we feel that serious damage would be rendered if the modest amount of funding now being provided were to be withdrawn or redirected. Rather, considering the benefits provided by cooperative education and the sizeable degree of expansion which appears possible, serious consideration should be given to providing additional support so that additional programs could be initiated.

We would propose that this be done in two ways by:

- funding additional institutions wishing to establish or enlarge their co-op programs; and
- providing assistance for dissemination projects aimed at informing students, employers, and academic officials of the benefits accruing to participants in cooperative education programs.

The rationale for the first strategy is apparent; this is the activity which IV-D has proven to be highly effective in accomplishing. The rationale for the second strategy emerges from the study's findings which addressed nonparticipation in co-op. For students, faculty, and employers alike, the main reason given for nonparticipation was always either lack of awareness or lack of accurate information.

The study also showed that many institutions report a sizeable amount of excess capacity in their co-op programs. We suggest that this capacity could be utilized by providing the types of outreach activities

mentioned above as well as by considering an additional course of action aimed directly at increasing the number of disadvantaged and/or minority students participating in co-op programs. The course of action would be to modify existing grant-in-aid regulations so that students would not have other forms of support reduced because of co-op earnings. Given co-op's value as an educational device and a placement aid, such a course of action appears highly justified, and it might easily result in a strengthened demand for co-op among the populations that USOE has declared to be priority target groups.

Two other recommendations relate to funding priorities. This study has identified career counseling as being one of the weakest components in the co-op system when student expectations are contrasted with institutional resource allocations. We suggest that the guidelines be modified to reflect an increasing concern with vocational aptitude testing and career counseling and the linkage of these processes to the co-op placement and graduate placement processes. Similiarly, we suggest that the guidelines be modified so that the movement of programs into certain size categories can be encouraged so as to promote cost-effectiveness in operation.

Finally, we strongly recommend that the funding actions of the different USOE sources of support for co-op be coordinated so that schools are not able to accrue more aid than is truly needed by applying to several different sources for support for the same program. At a very minimum, HEA and VEA support for co-op needs to be coordinated at the 2-year college level.